Unit 1

The First Lesson

Computer System Basics

Objectives

The General objective:

To identify the main concept of the computer system.

The specific objective:

By the end of the lesson, the student will be able to:

- **define the computer concept.**
- **identify some modern computer types.**
- **deduce the main elements of the computer system.**
- **differentiate between data and information.**
- **differentiate between hardware and software.**
- **state the kinds of the main memory.**
- **show the job of the central processing unit**
- **distinguish the different kinds of software**
- **identify capacity storage units**
- **search for internet websites with his colleagues**

(Introduction)

What is a Computer?

It is an electronic set which has the ability to store data and process them to reach certain results {information} by doing logical and mathematical processes using series of logical arranged instructions called the program.

Some Modern Computer Shapes

The computer is used in all everyday fields, when we call it so, the personal computer comes to our minds {desktop and laptop}. The computer appears in different shapes, size and do a lot of different jobs in our daily life .They can be classified according to speed, cost and size……etc.



laptop



Desktop



Smart Devices

Dear student: (enrichment)

The school administration has the desire to use the computer system instead of the traditional manual system to save and process data, print the final reports related to students and calculate the staff salaries and the school buffet sales.

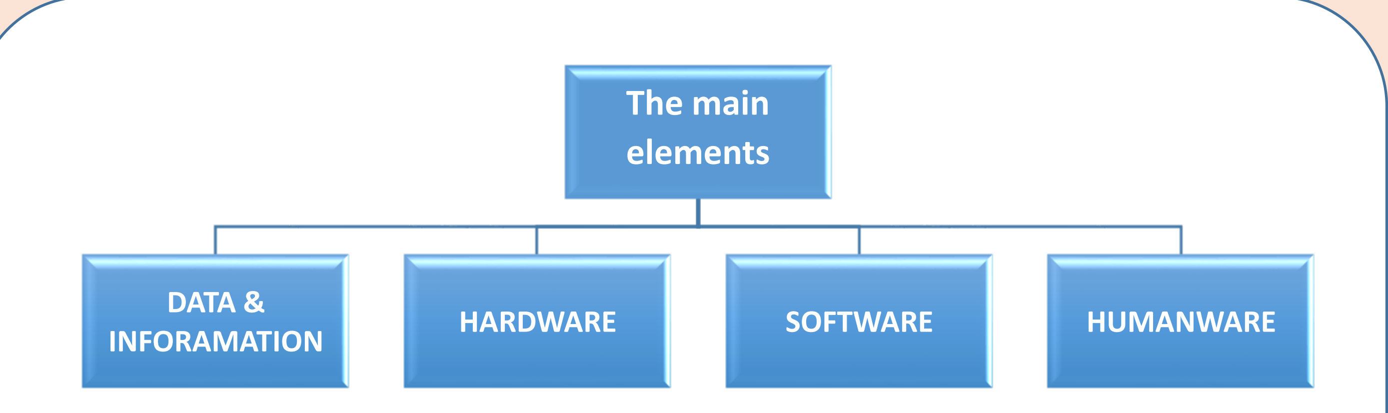
(enrichment)

An activity

With the help of your teacher and cooperation with your mates, determine the elements which the school administration needs to generalize using the electronic system and determine the relation among the main components of the computer system.

The main elements of computer system

The computer system consists of several elements working together to enable the computer to do its function. The most important elements are:



Data & Information

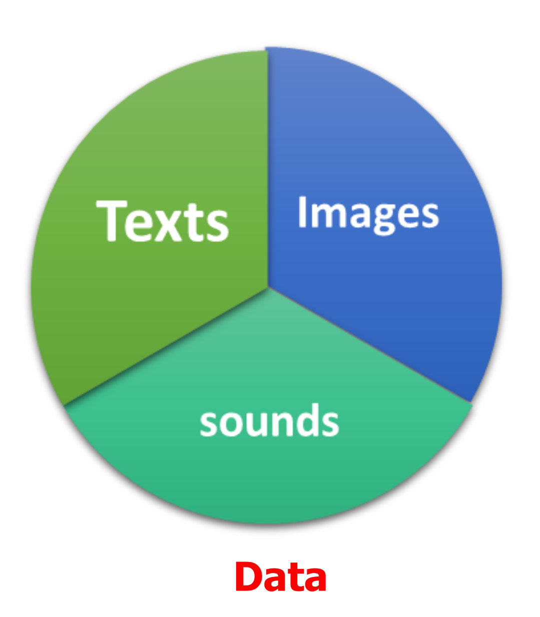
An activity

Dear students:

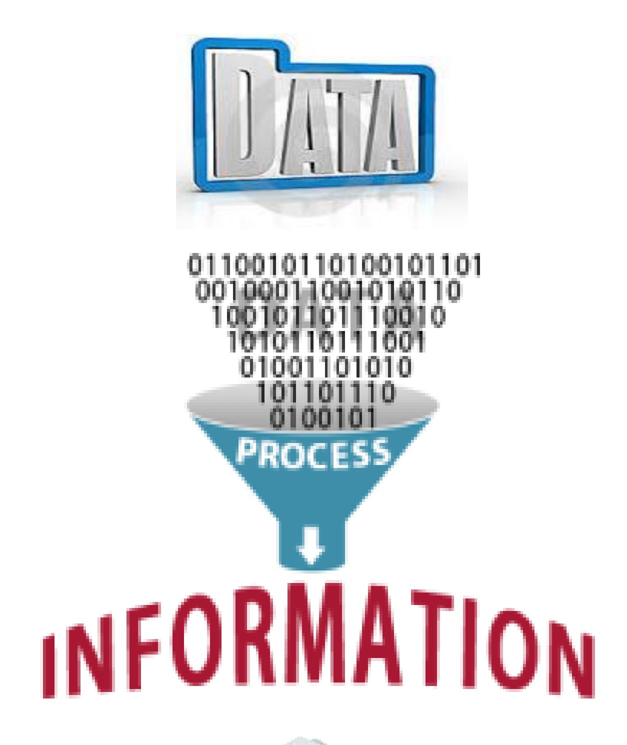
Is there difference between Data and Information? Cooperate with your classmates; search the internet to find the difference between data and information.

Data:

They are set of facts that can be obtained by observation or watching. These data can be text ,number ,character, image , video ,audio..etc .



Data

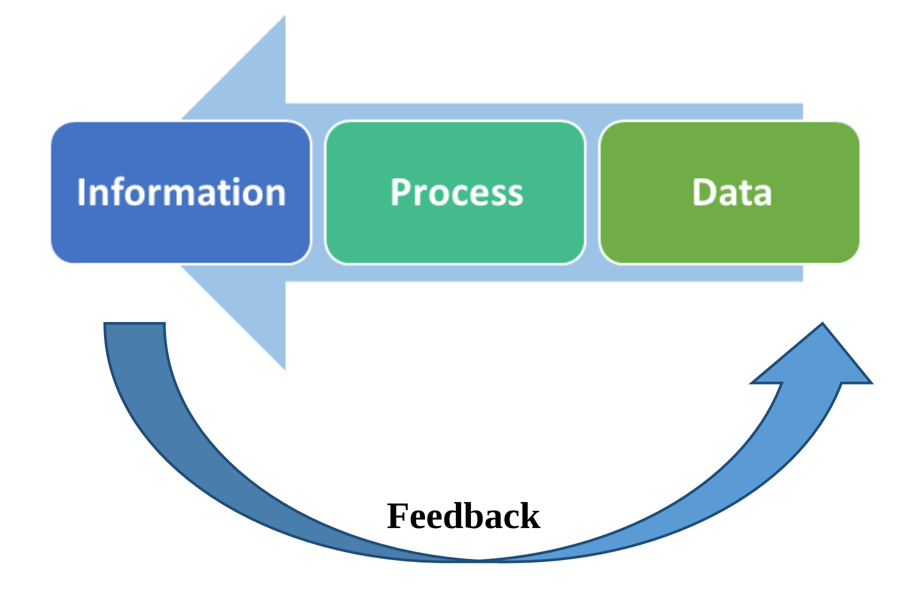


(Information):

Data are processed by classifying, organizing and analyzing to have sense to achieve certain goal (objective). They may be in the form of reports, tables and charts ……….. etc.

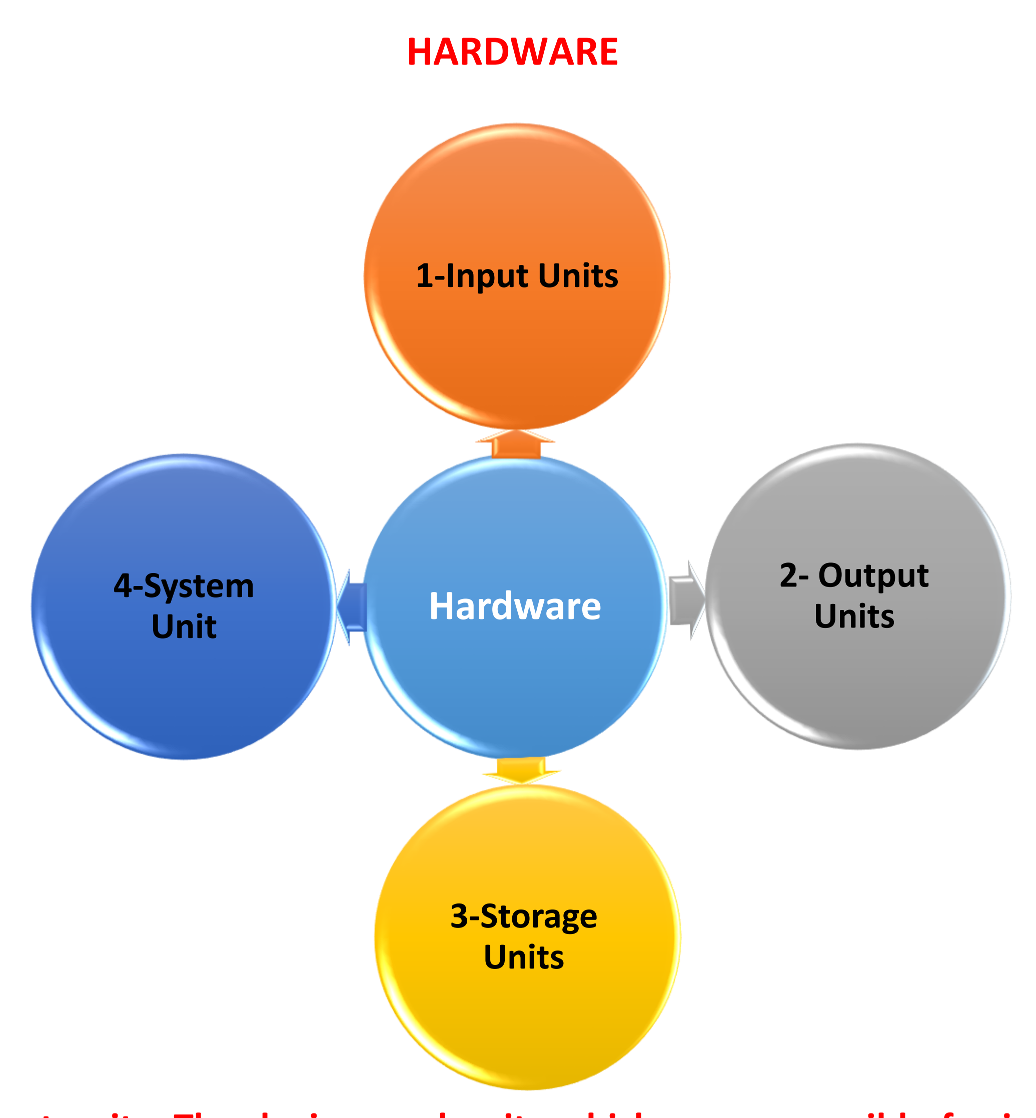


The following diagram shows the difference between data and information



SECONDLY: HARDWARE

Hardware is the actual content of the computer device which can be observed and touched. They include system unit, the screen, keyboard, the mouse………… etc. They can be divided into:



1. **Input units: The devices and units which are responsible for inputting different data into the device.**

2. **Output units: The devices and the units which are responsible for outputting and displaying information and the results that the computer processed and executed according to the user's instructions.**
3. **Storage unit: It is used to store data that can be retrieved (got back) at any time according to the user's need. The contents can't be lost when the electricity turns off.**

The most important storage units



Hard disc



Flash Memory



Dear student:

Cooperate with your mates; classify the set units in the following images:

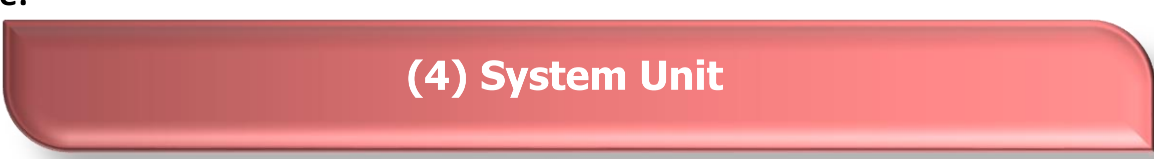
1. **Input unit**
2. **Output unit**
3. **Storage unit**



Tip: There are some units that can be used to input and output together such as Touch screen.



Hardware:



The most important components of the system unit:

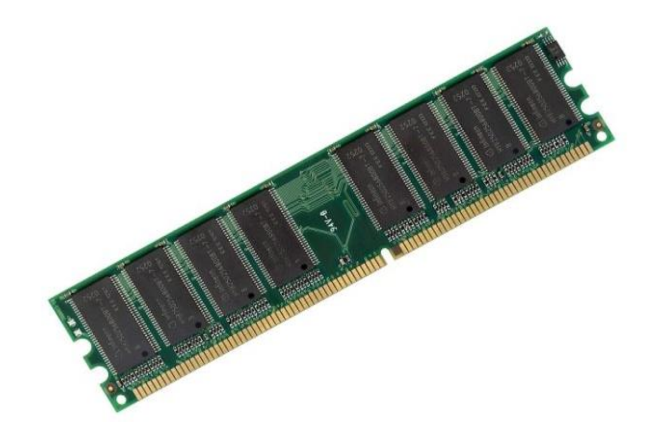
- The main memory unit
- Processor
- Motherboard

1- Main Memory

Random Access Memory (RAM)

Read-Only Memory (ROM)

–



- **Random Access Memory (Temporary Memory RAM):**

It loses its contents when the electricity turns off. It is the part that the user deals with.

- **(ROM):**





It contains all the main programs to start the device on the (BIOS). Its contents are saved by the producer company. It is called Read-only Memory because it is legible. Never can you write on. It is called the permanent memory because its contents are never affected by turning the electricity off and it can save its content permanently.



Dear student:

Cooperate with your mates to compare between RAM & ROM.

Central Processing Unit (CPU)

(CPU) is responsible for doing any logical and mathematical processes which lead to data Processing according to the orders and instructions of the different programs.

- The processor consists of two main units:
  - Arithmetic and logic unit (ALU).
  - Control unit (CU).



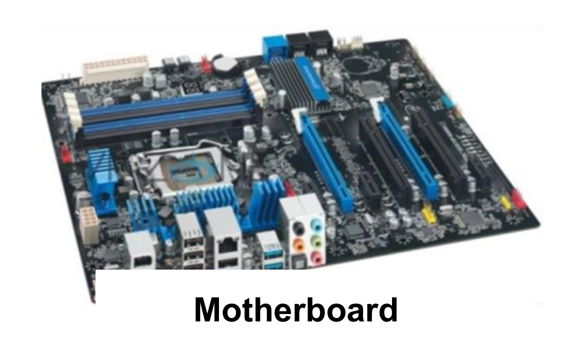




Tip.: (enrichment)

Processor, RAM & ROM can be constructed inside the computer case.


ComputerCase


Motherboard

(enrichment)

(enrichment)



With the help of your teacher and cooperation with your mates.

- Identify the unit of measuring the capacity of the computer memory.
- Identify the unit of measuring the processor speed in your personal computer.

Measuring units

(The processor speed - storage capacity)

1-Storage Units:

Byte : can be used in most computer systems as a unit of measuring data. It is used to represent a letter or a symbol. It consists of 8 bits. Storage unit can be measured by doubling Byte.

Bit: represents passing or not passing the electric current. It takes the value of 0 or 1 as 1 represents passing the electric current (on) and 0 represents not passing the electric current (off).

1 Byte = 8 bits a unit of measuring storage capacity

1 Kbyte = 1024 Bytes a unit of measuring units of computer storage.

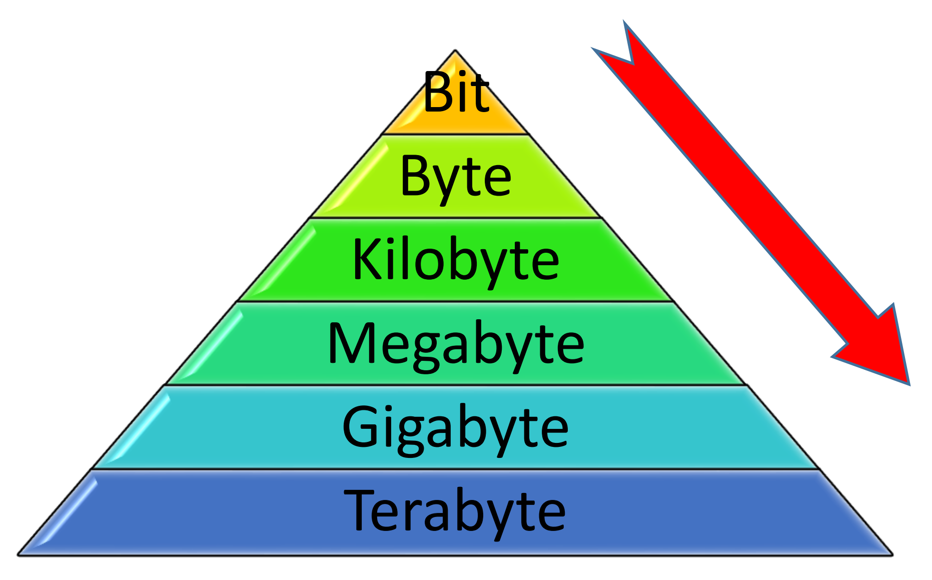
1 Kbyte = 1024 bytes (kilobyte)

1 M byte= 1024 kbytes (Megabyte)

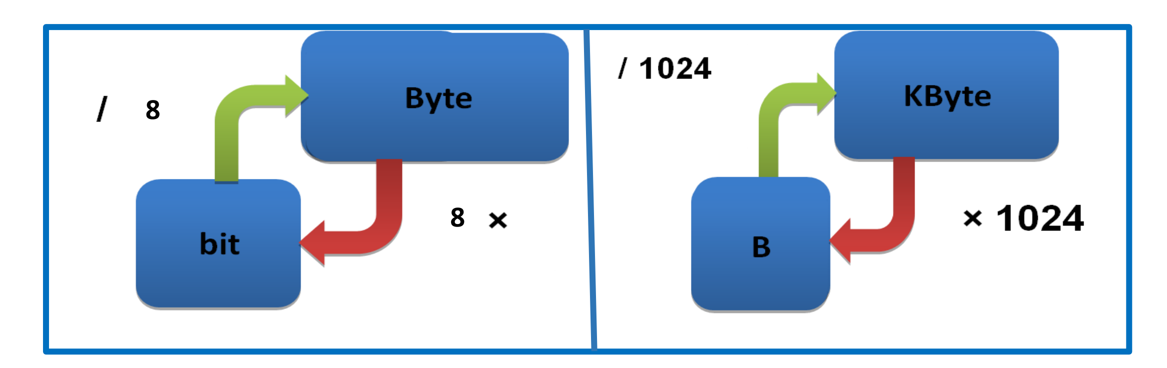
1 G byte = 1024 M bytes (Gigabyte)

1 T byte = 1024 Gbyte (Tirabyte)

The order of units of measuring storage capacity from the smallest to the biggest (A to Z) (enrichment)



To change among the units of measuring: (enrichment)



Tip:

When you change from Bit into Byte divide by 8

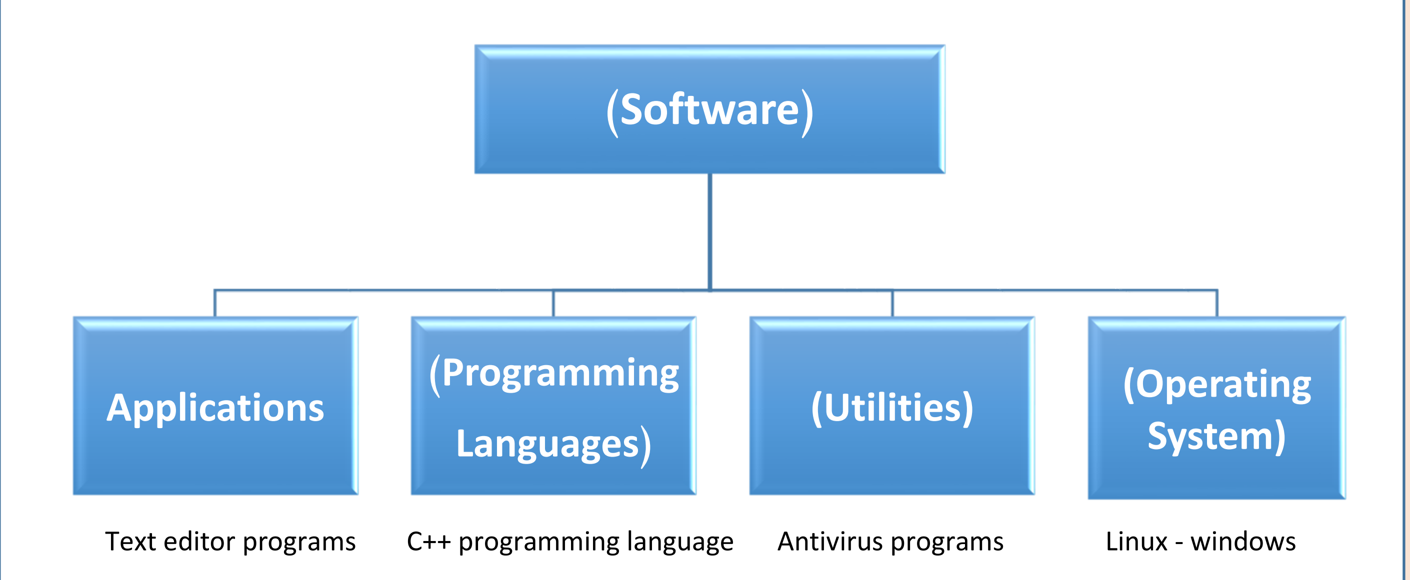
When you change from Byte into Bit you, multiply by 8 and so does the rest of changes (/) means division process instead of (÷) in arithmetic system.

2- The unit of measuring the processor speed :

Hertz (HZ) and its doubling is the unit of measuring the processor speed.

THIRDLY: SOFTWARE

Software is a set of programs used to operate the computer and employ it to do different tasks.



Closed Source Programs:

A type of programs where you can't read its source code. It is only available for programmers or designers; (The source code is the programming code of the program).



Closed Source Program

Open Source Programs:

They are the programs of source code available for use, editing, development and distribution.



Open Source Programs

- The comparison between open and closed source programs:

Open source	Closed source
Available for free	Determine costs according to the usage license
The source code is available for all to modify and develop it	Developing the source code is done by the programmers of the owners only
Distributing programs to others without restriction is available	Not allowed for use but after getting the license.



Dear students:

With the help of your teachers; Is this phrase right or wrong, and why?

- All open source programs are free but not all free programs are open source. ( )

- Software is divided into three types according to the copy rights:

(enrichment)

1- Freeware:

The responsible company lets the user make full use of it for free.

2- Shareware:

Shareware is an experimental copy for the original software with limited abilities or limited time and when time is up/over, shareware must be bought.

3- Software that can't be used except by buying the original copy.

It is protected by ID.

FOURTHLY: HUMANWARE

↓

User | **Programmer** | **Designer** | **Analyst**









Remember

Computer :

It is an electronic device with ability to store data and process them to reach certain results (information) by doing some logical and mathematical processes using a series of logically arranged orders (instructions) called the program.

The main content of computer:

Human ware – software – hardware – Data and information.

The computer hardware components :

Input units – output units – storage units – system unit.

The most important components of system unit.

- The main memory unit
- Mother board
- CPU central processing unit (Processor)

The Processor consists of two main units:

- Arithmetic and Logic Unit (ALU)
- Control Unit (CU)

Software is a set of programs used to operate the computer and employ it to do different tasks:

- Closed Source Programs
- Open Source Programs

According to the copy rights, software is divided into three kinds:

- **Freeware**
- **Shareware**
- **Software that can't be used except by buying the original copy**

Questions & Exercises



First question: Choose the correct answers:

1. "Touch screen" is one of ……………. units.

A) Input only　　C) output only
B) Input and output　　D) None of all mentioned

2." ……………….. "is one of the output units.

A) Printer　　C) Keyboard
B) The mouth　　D) Microphone

3. "………………."is the memory which keep data temporarily.

A) RAM　　C) ROM
B) Flash Memory　　D) All mentioned

4. Three Kbytes is equal to…….. bytes.

A) 3 X 1024　　C) 1024 X 1024 X 1024
B) 3 X 1000　　D) nothing of what was mentioned

Second question: Complete the following:

1. **…………. , …………. , …………. are examples of computers**
2. **…………. , …………. , …………. are computer system elements.**
3. **…………. , …………. , …………. are of the output units.**
4. **……………………………………….. is the unit of measuring the processor speed.**

Third question: Answer the following questions:

1. **Why is the permanent memory unit called so?**
2. **What do you mean by open source programs?**
3. **Show the difference between: freeware – shareware**

The questions can be answered through:
MS Word program from the first lesson answer file in
(Answer and project folder)



Pre-question for the next lesson

ere are several kinds of operating system which can be used.

- **What are the operating systems?**
- **What are the operating systems which can be used?**

Lesson two

Operating Systems

Objectives

The general objective:

- To identify the computer operating systems.

The procedural objective, at the end of the lesson:

The student will be able to .....

- give the meaning of operating system.
- numerate the operating system jobs.
- differentiate the different types of modern operating systems.
- mention the similarities of Graphical user interface (GUI) elements of operating system.

Operating Systems

Operating system is the most important kind of computer programs as there must be an operating system installed in the computer to be able to run the other types of different programs and applications and managing the Hardware of the computer.

Operating system is the main structure of the computer system as the computer searches for it every time on starting inside one of the storage units (often H.D). Then, the operating system is loaded inside RAM. Hence, the computer becomes ready to receive the user's command or instructions.

- **Operating system definition:**

It is a set of programs responsible for managing the hardware of the computer. On one hand it is a bridge between the user and his programs and the hardware on the other hand.

Operating systems are responsible for managing:

- Computer hardware
- Applications
- Command prompt is where the user can prompt commands to operating system or through graphical user interface(GUI).

Command Prompt:

It is called "Terminal" in some operating systems where the user prompts commands to the operating system from command prompt using the keyboard.

```
[moe@localhost ~]$ clear_
```

Graphical User Interface (GUI)

It contains some different commands and instructions in the form of menus, graphics , tool bars and the basic input unit is the mouse that makes computer more interesting.





The user can prompt commands in two ways:

- Command Prompt
- GUI

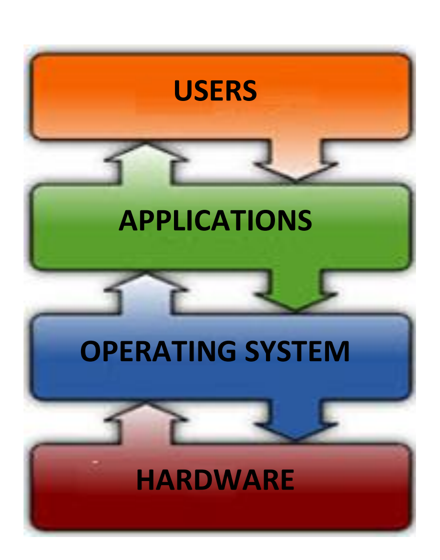
Operating systems Jobs

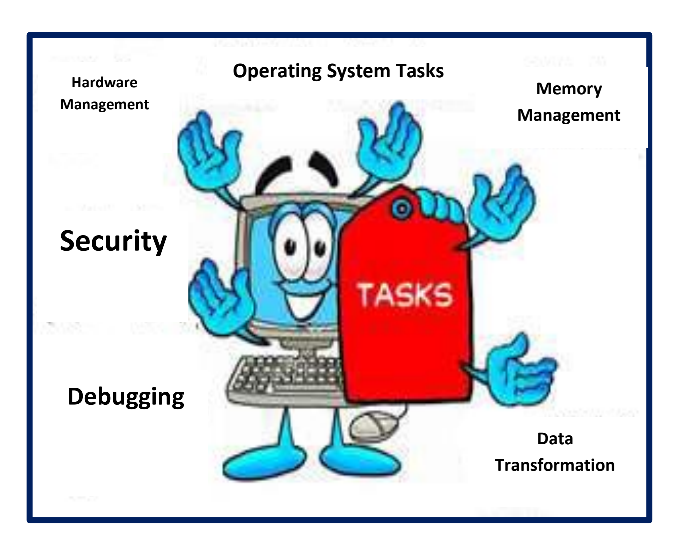
Operating system has several tasks and functions to do related to operating computer, controlling its contents, Hardware and Software.

We can define some tasks of operating systems in the following points:

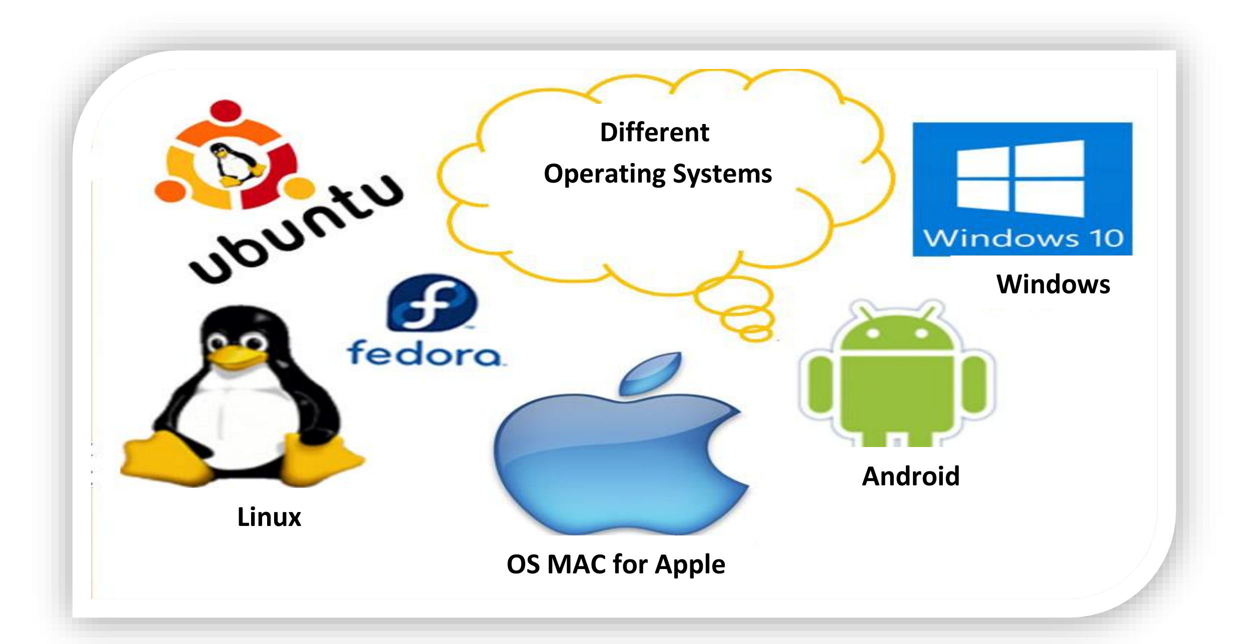
The most operating system functions are to: (enrichment)

- manage storage units and the other components of computer (printer – scanner).
- organize the software dealing with memory.
- transmit data among the different units and save them on storage.
- secure (password – different user validity).
- provide interface for users through which the user can deal with computer.





Operating Systems (Open or closed Source)



Previously, we referred that software can be classified into open and closed source. Hence, we can classify operating systems into

Closed source operating systems:

- **Mac OS X** is an operating system specified for apple Mac devices that is attractive and easy to use.



- **Windows :**

One of the most famous operating systems and more common for personal computer.



- Open source operating system:



Linux: Open source operating system – easy to use and developable.

A lot of its distributions are found (available) and the most famous are Ubuntu, Fedora







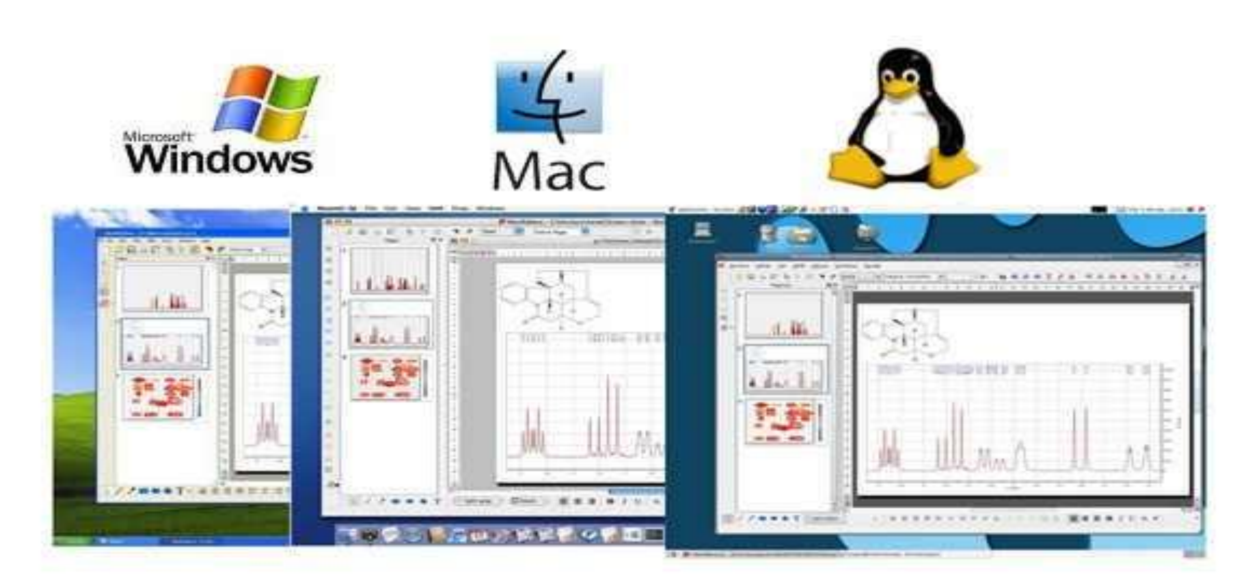
Mobile phones operating systems:

There are open and closed source operating systems for mobile phones. On purchasing, operating systems and software applications are important factors especially when the technological specifications of mobile phones are approximated with each other. Android is one of the open-operating systems. It is not only used in Mobile phones but also in tablets.

Characteristics of GUI

It provides the user with graphic user interface which allows:

- Showing programs in the regular window frames.
- Using simple drop down menu and tool bars.
- The capability of operating several programs at the same time.
- The capability of using Arabic and other languages as application interface.
- Provide web browsers for web sites pages.



Dear student:

- There are some specific icons for operating system write the operating system name which refers to each icon.
- Cooperate with your teacher; look for examples of Mobile phone operating systems.









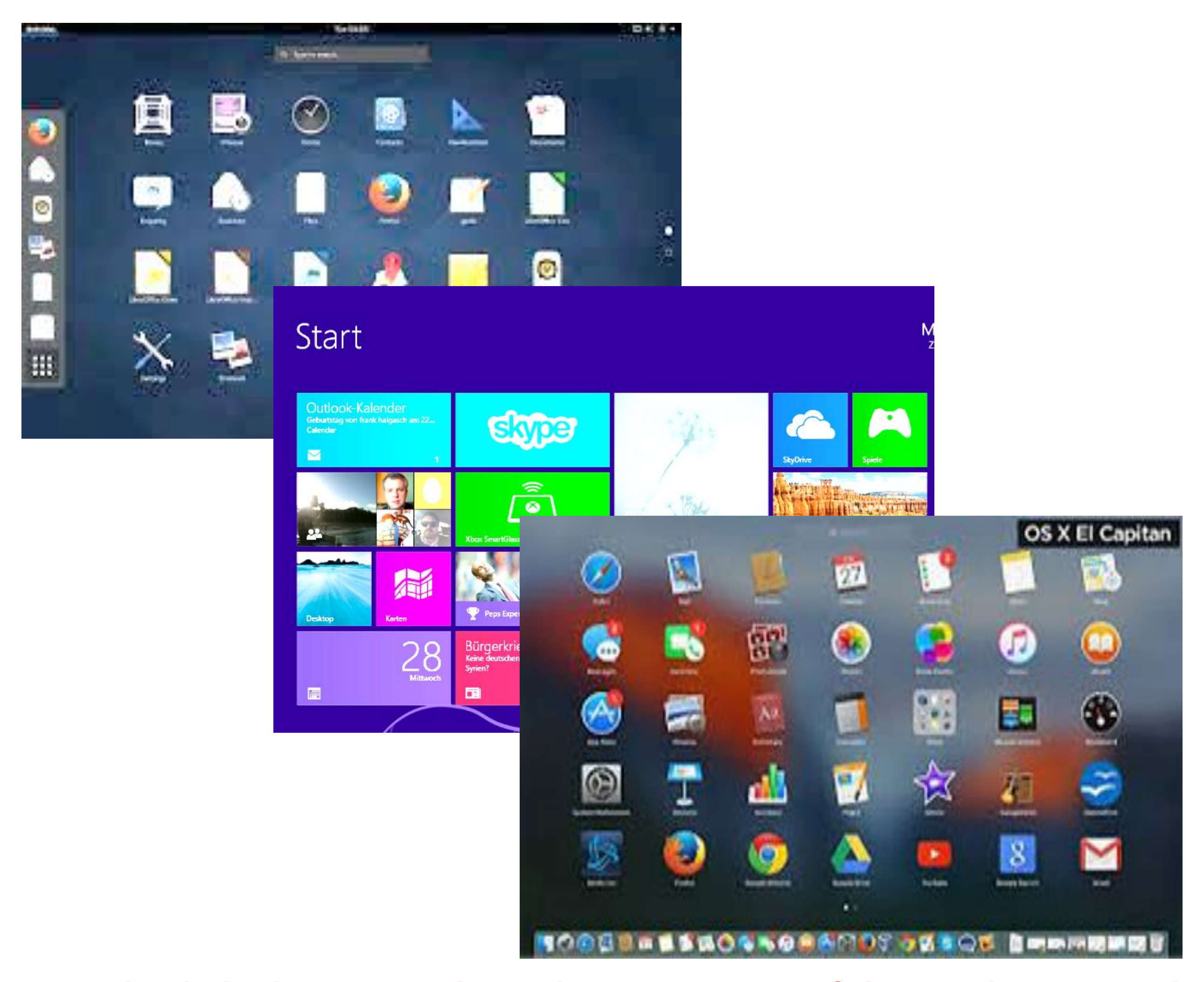


…………. …………. …………. ………….

Opening Screen of the Operating System

On turning on the computer, it makes sure of the safety of main units such as temporary memory (RAM), Keyboard, screen and disc drivers. The self-test program which found in ROM can do that; In case of having no problems, operating system starts then, the opening screen appears for user to start achieving his work.

There is similarity in GUI operating systems



There is similarity among the main components of the starting screen in different opening systems.

–**Background:** is a color or image that can be changed by the user.

–**Icons:** small symbols used in running different programs quickly as soon as you double click the left button of the mouse.

–**Bars:** group of symbols of installed software on operating systems and others related to the important preparations of the system such as time and date setting and sound control and the network

Tip:

The computer can contain more than one operating system but on starting, choose one of them to be loaded.

Dear student:



With the help of your teacher, do the following:

- Choose and load one of the operating systems installed on your computer such as windows.
- Write three icons names found on the desktop.
- Change the background (image or color)
- Adjust time and date
- Look for one of the programs to change the image.
- Search for internet transverse icon, load internet transverse program.
- Load Ministry of Education website.
- Look for one of the text editors and write your notes about the ministry website using text editor.

Remember

Operating system: a set of programs responsible for managing the Hardware moreover, it is considered a means between the user and his programs on one hand and the Hardware on the other hand.

Operating system is responsible for:

- The Hardware of the computer
- Software applications

Operating system functions:

- To control storage units and the other components such as printer, scanner………..etc.
- Organizing the software dealing with memory
- Data transmission among different units of the computer and keeping in storage units.
- Security (password – user different validity).
- provide interface for the user through which he can deal with the computer.

* There are different closed and open source operating systems.

Modern operating systems are distinguished with:

- providing GUI for the user as it provides:

- Program display in the form of organized windows.
- Using the simple drop-down menu and toolbars.
- The main components of the main screen are similar among the different operating systems.



Exercises

The first question: Tick (√) infront of the right phrases and (×) infront of the false ones

- Operating system must be installed on the computer to be able to operate the rest kinds of different programs and applications (   )
- The user can prompt commands and instructions of the operating system through command prompt (   )
- MAC OS X is one of the open source operating systems. (   )
- Android is an open source operating system. (   )

The second question:

- Define three functions of operating system?
- Show the most important advantage of (GUI) graphical user interface?
- What is the main function of self-test program?

The answers can be done through MS word program at the second lesson answer file in project and answer folder



Prepare for the next lesson

One of the advantages of operating systems is file and folder management and arranging them in folders and indexes.

How do we manage files and folders (Create, save,)?

The Third Lesson

Dealing with files and folders

Objectives

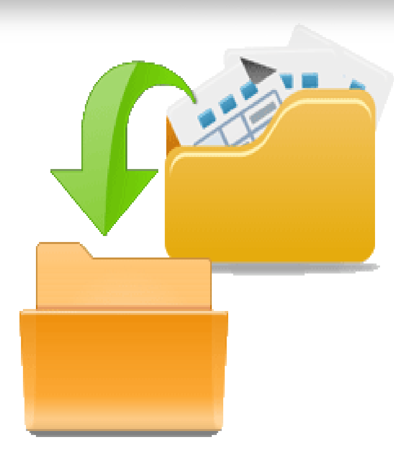
The General objective:

To perfect dealing with files and folders

The procedural objective, at the end of the lesson students will be able to:

- **identify the file and folder concept.**
- **identify the most important kinds of files.**
- **deal with the file (create, save, copy and cut)**
- **deal with the folder (create, save, copy and cut).**

Dealing with files and folders



One of the most advantages of operating system is to control files management and organize them in folders and indexes.

Each operating system depends on kind of file systems which is used for how to store, restore, organize and manage files.

Firstly dealing with files

Files are the most important sources used on dealing with operating system; each text document , image , video or audio you deal with is a file. To be able to manage files and deal with them efficiently, we must collect and arrange those files logically, this can be done in operating systems by creating folders including connected files inside them.

Tip:

- **All processes carried out by the computer are** Kept inside RAM and when the electricity is off this temporary memory loses its contents.

- To keep your doings permanently, you should save them in the file on a storage unit.



Dear students :

With the help of your teacher, compare between the different storage units concerning the storage capacity as follows:

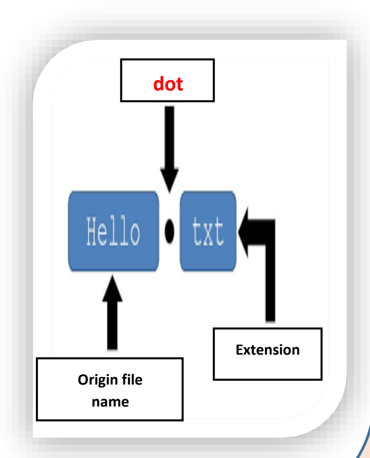
File :

Is a set of data which is stored in storage units in different kinds and extensions.

The user can deal with it on restoring, modifying, deleting, sharing and printing ……etc.

- File name consists of two parts, the first is the origin name and the second is called extension which distinguishes file type. It often consists of 3 letters.
- The file origin name is separated from its extension with a (dot).

- The file has certain types which differ according to the application used in its creation.



The most important file types

Video files:

This file contains sound and images. It is created by special programs for recording videos or audios.



Image files:

They are created by graphic programs including graphic data with different extensions which defines the image accuracy, clearance and size.



Text files:

There are several office programs such as MS office, libreoffice through which text files are created.

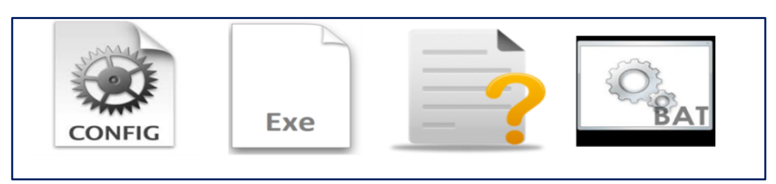




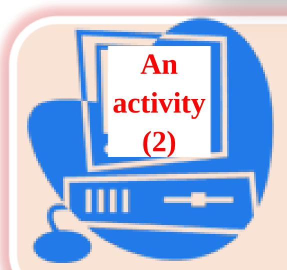
System files:

They belong to the operating systems, programs and sets connected to the computer.

These files must not be played with or deleted so as not to affect operating system work badly.



File creation and saving



Dear student, with the help of your teacher, do the following:

- create text file through one of the text editor
- Save this file in one of storage units

file creation:

- open one of the text editor programs
- Write one of the text phrases

File saving:

- Open file menu.
- Chose save as, *save as* dialogue box appears.
  1. Write the file name in the specific place.
  2. Define the place in which file be saved.
  3. Click save.

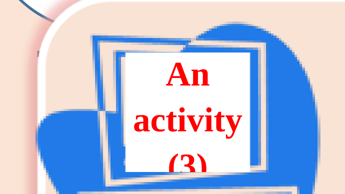
Text Editor Program window

Note that:

File saving ways are similar even if operating systems are different

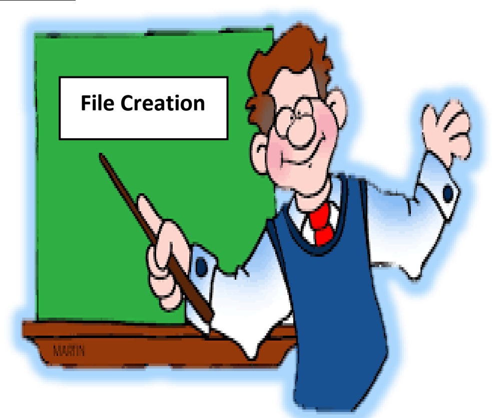
Tips:

- **At the first time to save files the command save is similar to save as command.**
- **Save as is used to save file copy using new name at the same place or any other place.**
- **You can use the short keys in the keyboard (CTRL+S) to save the file.**
- **It is preferred to file name to suit its content to be easy to remember.**
- **You must remember the place where you saved.**



With the help of your teacher.

- create an image file and save it using one of the image processing programs available in your computer.
- Differentiate between save and save as command.



SAVE AS	Save
Used on creating the file at the first time	Used on creating the file for the first time.
Used on changing the name of the file or saving the file after modification and with a desire to save the file with different extension	Used on modifying the file with a desire to save the modification at the same file and with the same name as it is.

Searching for a file in the computer (enrichment)

You can search for the file in different ways:

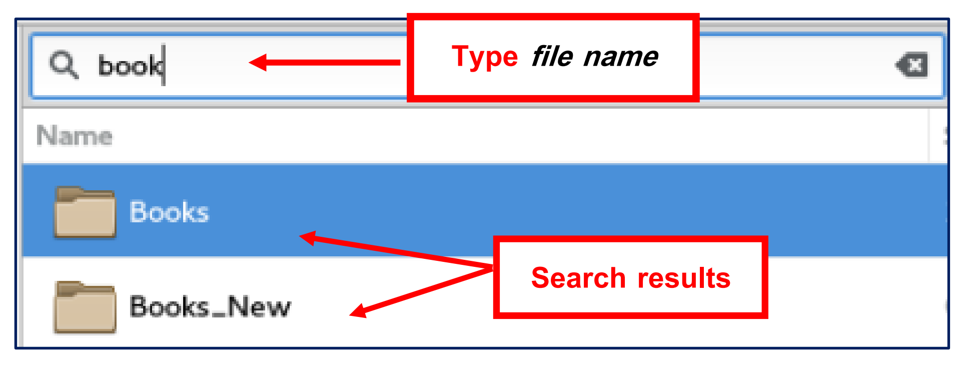
- Using the origin name part of it, or by the extension (type). This can be done using search command which different operating systems provide.

Tip.:

Search tape can be shown by pressing (CTRL+F) on the keyboard.

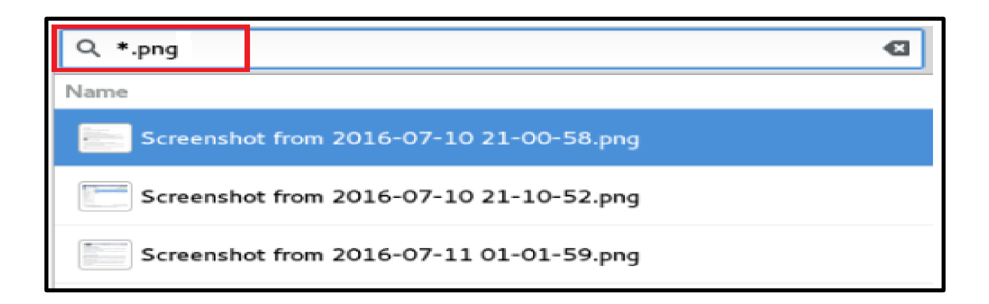
The search using the name:

Write part of the file name or the fill name in the search bar then file names appear including the file name.



The search using file extensions:

This can be done using the symbol (*) instead of the file origin name and write the file extension and they can be separated with a dot (.) in the following example, means search all files with extension PNG.



Dealing with Folders

The more your work is arranged and organized, the less effort you do and the less time you take to reach your goal. So you need to organize and arrange your files by putting each connected group in a separate place to be easy to reach.

Folder Definition:

It is a place inside a storage device which contains a file or more and also other folders called sub-folder.

Sub-folders:

The purpose of using folders is an organized process for the storage units contents to reach the required files easily and quickly where operating system allows the user to create several folders with certain names which refers to the folder content.

Folders have several similar shapes according to operating system type and content.



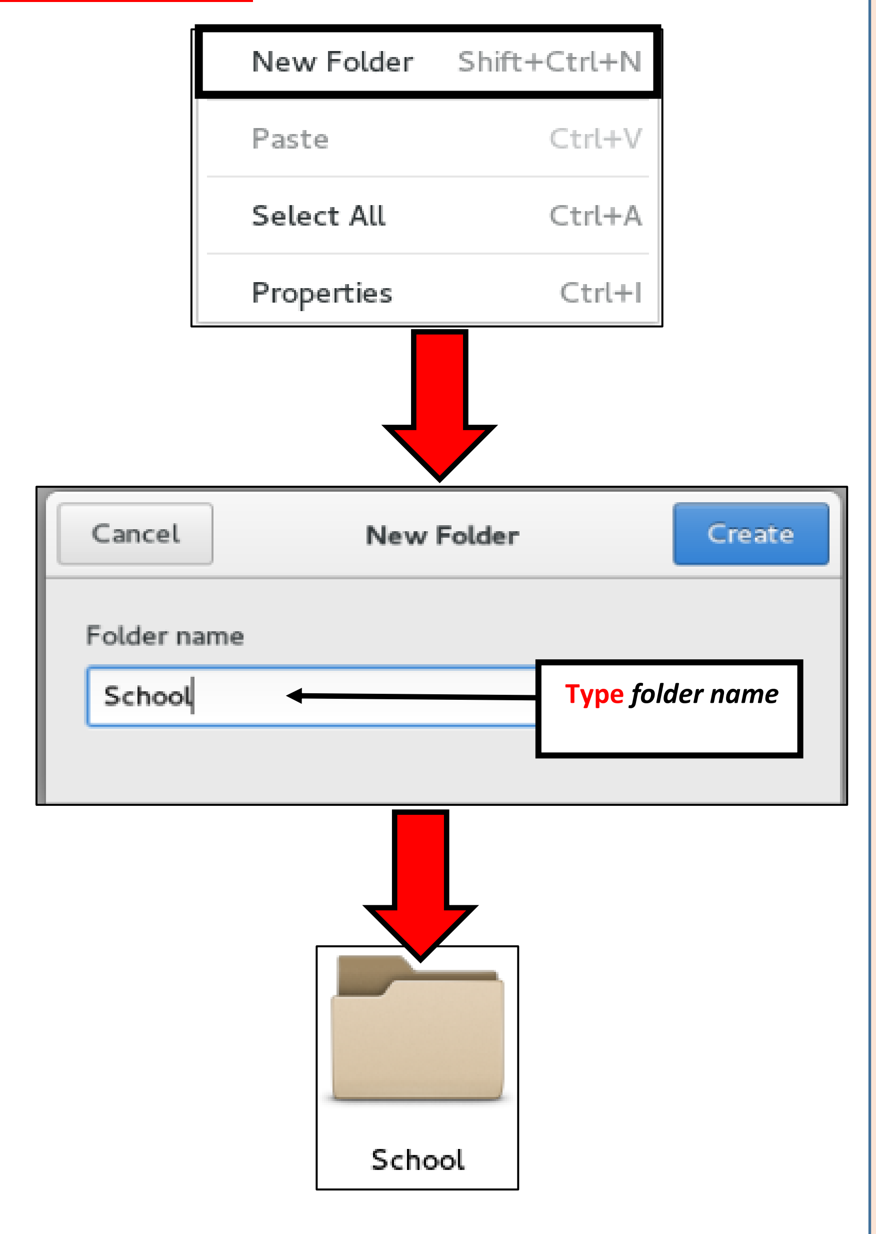


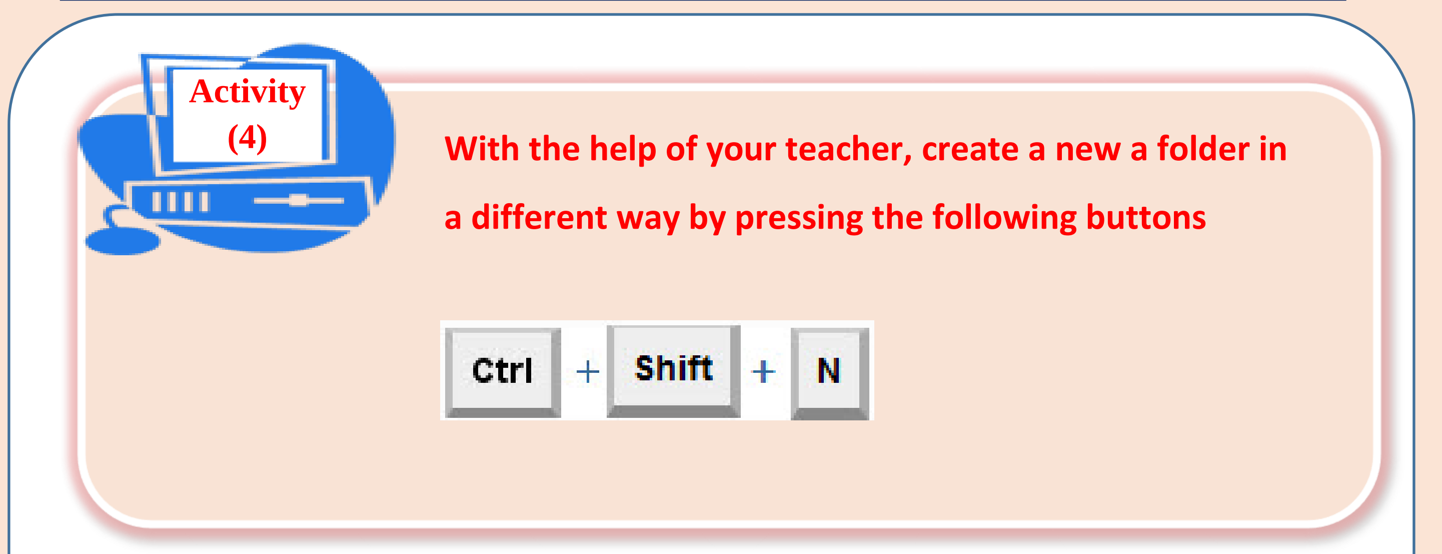


creating a folder

To create a folder, do the following steps:

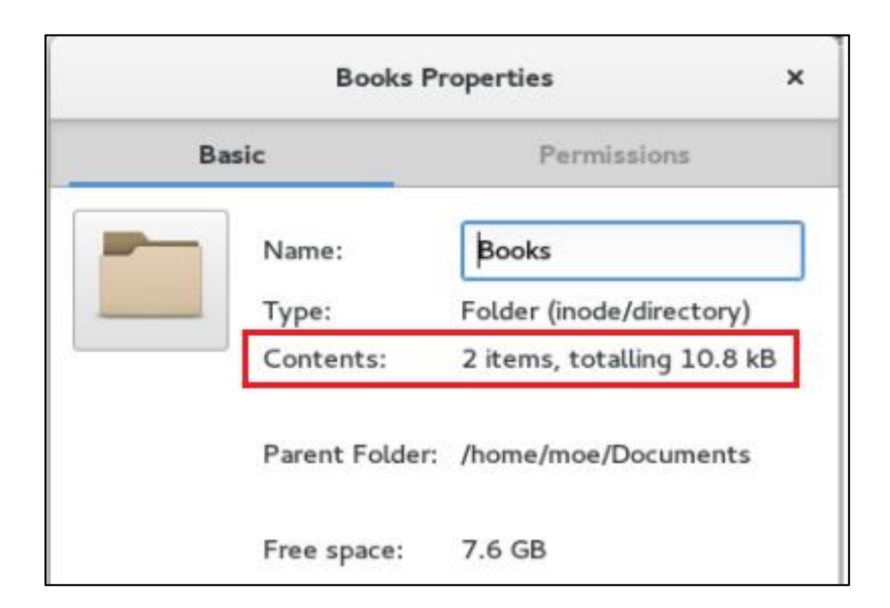
- Click the mouse in the place where you need to create the folder. Click the right button of the mouse, the context menu appears as found in the following shape.
- Select the New folder command
- write the folder name.
- Click "create".

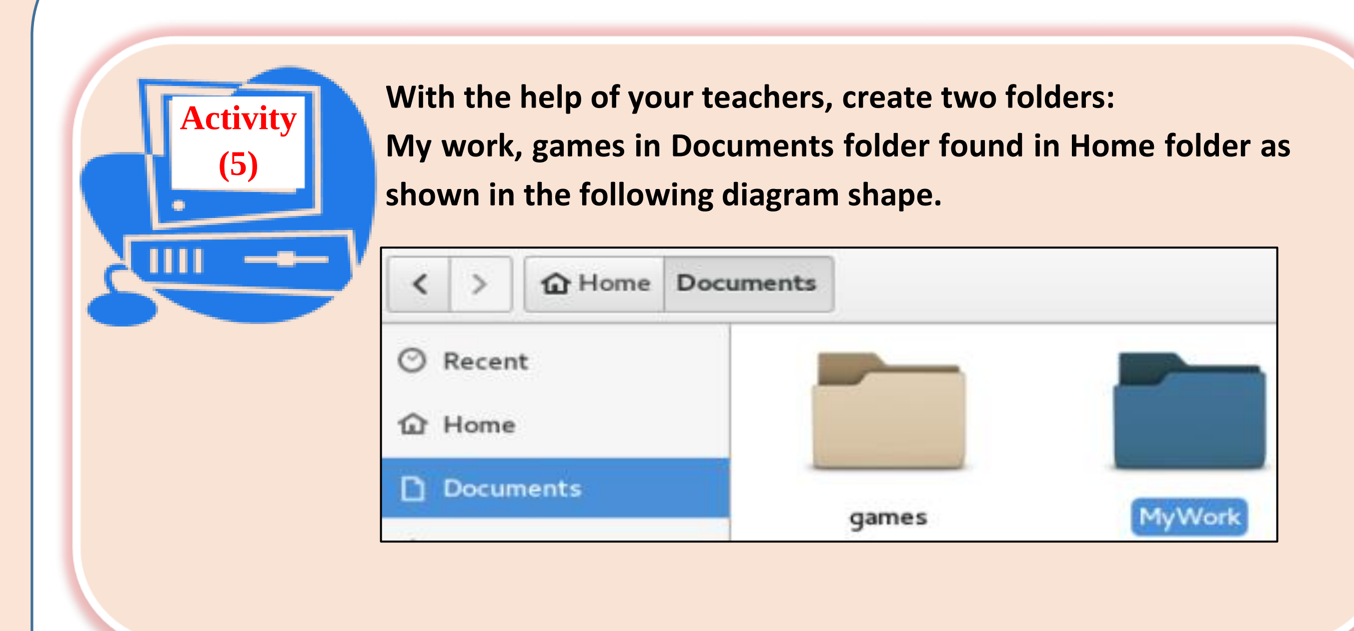




Tips:

- The folder may contain files or sub folders.
- One of the folder properties is to identify its size and the number of its contents (items).

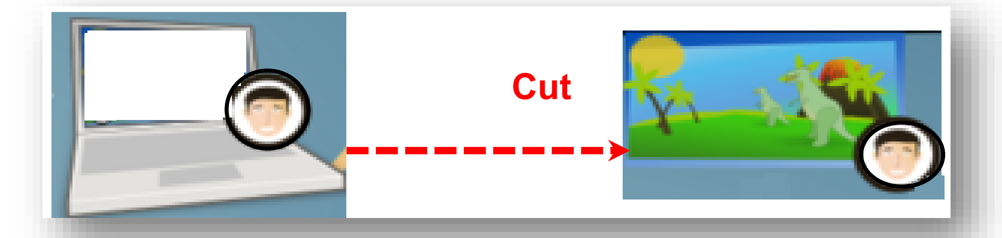




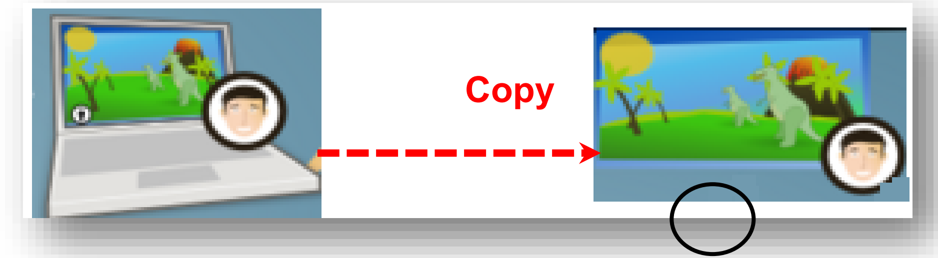
With the help of your teachers, create two folders:
My work, games in Documents folder found in Home folder as shown in the following diagram shape.

The folder cut & copy

- Cutting The folder: to move the folder with its contents from its current place to a new place at the same storage unit or any other storage unit.

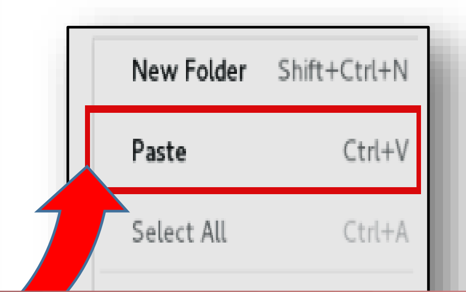


- Copying The folder: make another instance to get spare copy of the file either at the same storage unit or any other.



The folder "copy" steps: with your teacher discuss the steps of the folder copy

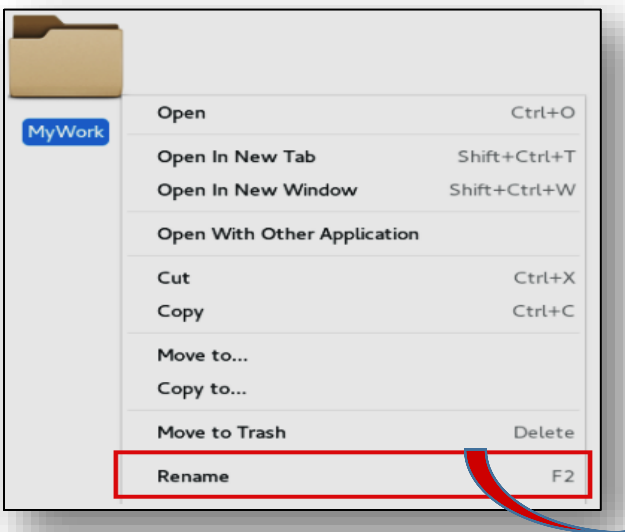
- Using the context menu of the folder.
- Choose "copy" command.
- Move to the new place (the same storage unit or the other)
- display the context.
- Choose "paste" command then the folder is copied.



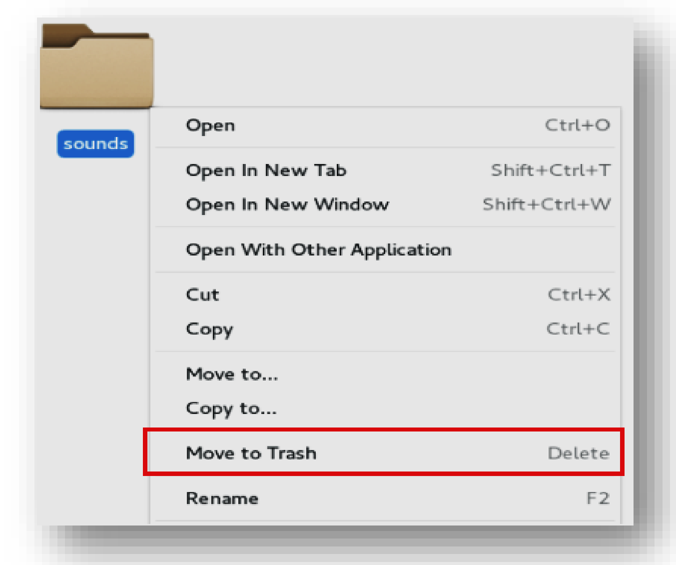
Re-naming the folder

To change the folder name, follow these steps

- Use the context menu of the folder.
- Click "Rename" command
- Write the new name.
- Click "Rename"



Delete Folder



To delete the folder follow these steps:

- Using the context menu of the folder.
- Click "Move to trash"

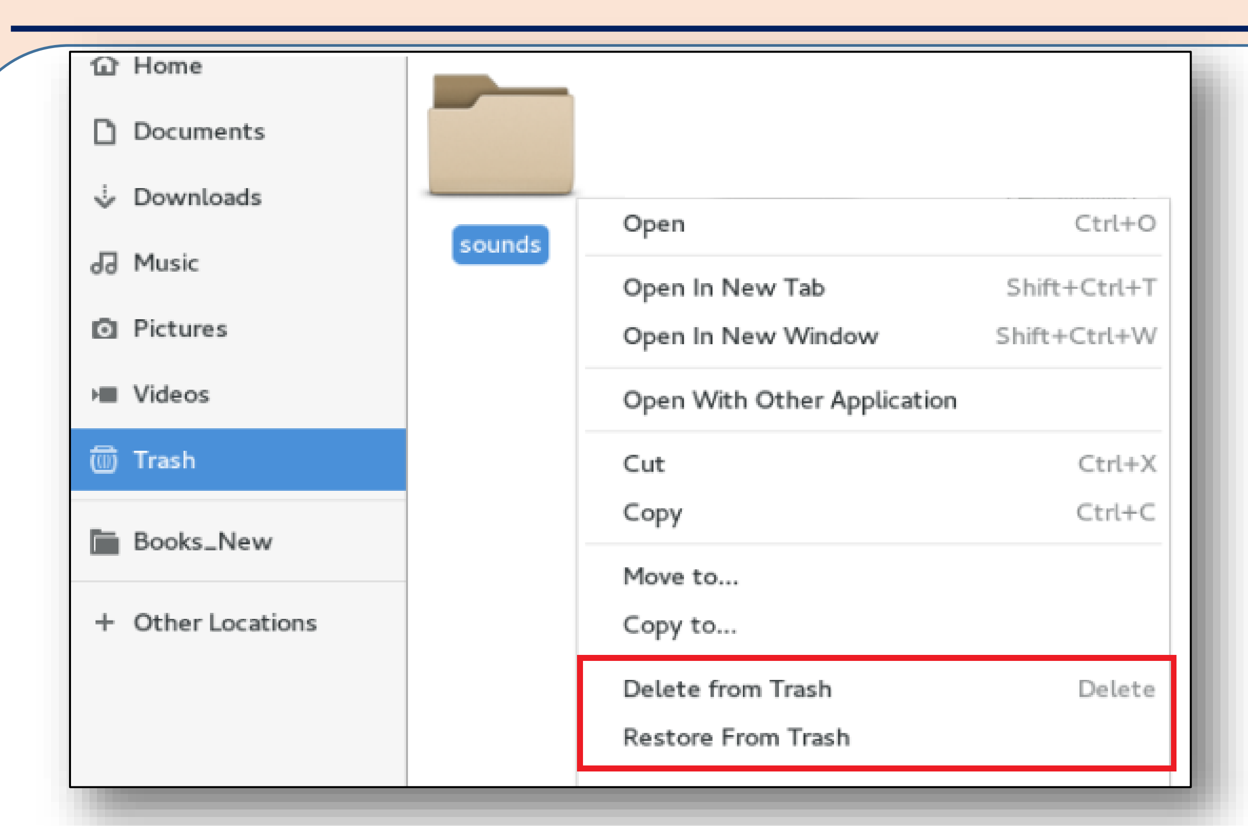
restoring the deleted (files or floders):

Any deleted folder or file can move to trash (the basket where deleted files or folders exist) where it can be restored again or deleted forever.

The steps of restoring deleted file or folder:

- Move to trash, deleted files or folders appear.
- Restore the folder or delete it forever.
- Click "Delete" from Trash to delete the folder forever.
- Click "restore from Trash" to restore the folder.

As shown:



restoring the deleted files / folders or deleted forever



With the help of your teacher do the following steps

- create a new folder named "games".

- open it, then create folder "cars" inside it.

- copy "cars" folder and past it at the same place with another name "football".

- After doing the previous steps, make sure that the folder "games" is found and inside it the other two folders "cars" "football" are found.

Remember

- One of the most important advantages of operating system is managing files and organizing them in folders and indexes.
- In order to save your work permanently, they must be saved in files in a storage unit.

File : is a set of data which is stored in a storage unit with different extensions and types. The user can deal with them by restoring, modifying deleting, Sharing, printing ……………etc.

The file name consists of two syllables – the first is the origin name and the second is called extension which determine file type. It often consists of three letters.

On saving the file.

- For the first time, "save" is equal to "save as"
- You can use "save as" to save the file with a new name at the same place or another.

You can search for the file in several ways:

- Search using a name
- Search using the file extension

The folder definition :

- It Is a place in the storage unit containing file or set of files in addition, it often contains a folder, other folders called sub folders.
- The folder may contain files or sub folders.
- One of the properties of the folder is to identify its size and the number of its contents.

The folder can be manipulated by: cut – copy – Rename – delete

Restoring the deleted files or folders:

On deleting a file or a folder, it moves to Trash where it can be restored or deleted forever.

Questions & Exercises



The first questions: Put (√) in front of the right phrase and (×) in front of the false ones

(1) The type of the file can be identified through its icon or extension ( )

(2) The permanent delete in Trash can be restored again ( )

(3) Cut and paste of the folder means repeating it to get a spare copy either at the same storage unit or at another.

(4) Files can be saved by using (Shift + S).

The second question: what is the difference between:

(1) File and folder

(2) Save and save as

(3) Delete and Delete from Trash

The third questions: Write the scientific term:

(1) Files belong to operating system and components connected to computer, never play with it.

(2) A collection of data which is stored in the storage units in different extension.

The questions can be answered through:
MS Word program in the first lesson answer file in
(Answer and project folder)



Pre question for the next lesson

There is what we call computer networks and files share

- **What are the computer networks?**
- **How can you share your files with your mates?**

- How can you share your files with your mates?

The Fourth Lesson

The Computer Networks

Objectives

The general objective:

To identify the computer networks and sharing files

Procedural objectives :

At the end of the lesson, the student will be able to:

- **define the computer networks concept.**
- **identify types of computer networks.**
- **mention the importance of computer networks and its usage**
- **share files with his mates.**

Computer networks

Information and communications are the most important factors for any association to pay off (succeed). in the past, each association had a number of computers and communication devices such as (phones, faxes ……..) but each one of them worked separately so the association was informatively.

To solve this problem to benefit from information technology in a better way, there had to be computer networks to connect associations together. This is called computer and communication sets integration.

Computer networks enable their user to reach remote data base found in the same association or others. The computer has the power to process data. If it is connected to a network of other computers. It will become more powerful and capable of doing different tasks.

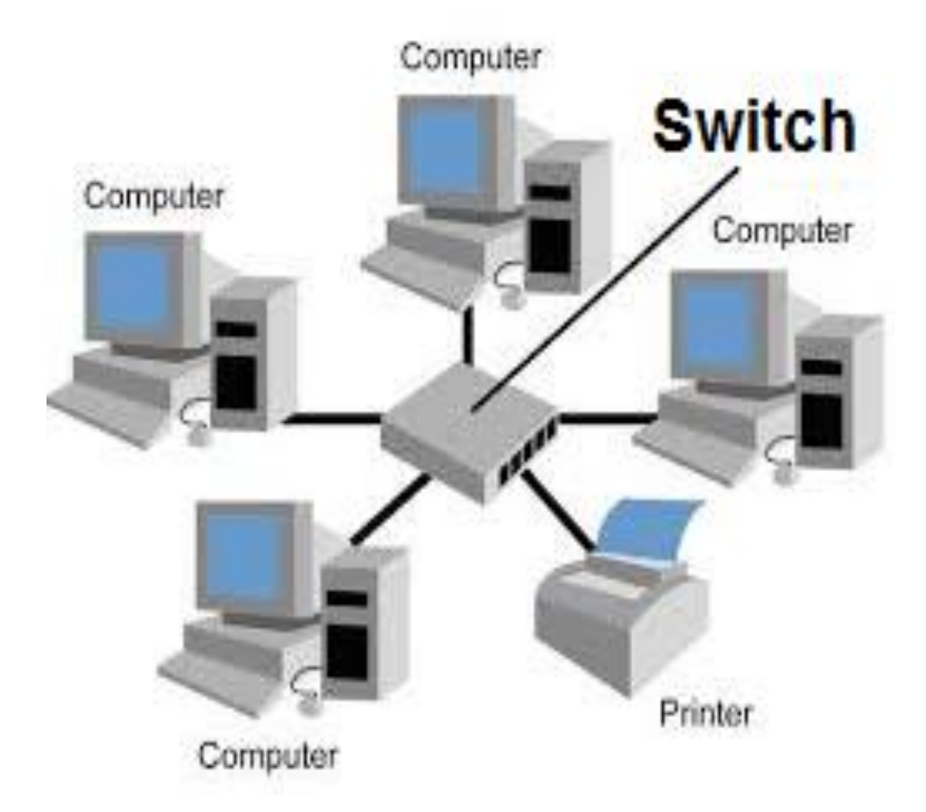
The computer net and its importance:

It is a connection between two sets or more through a wire or wireless means to share the resources (sets and data).



The most important benefits of computer net: (enrichment)

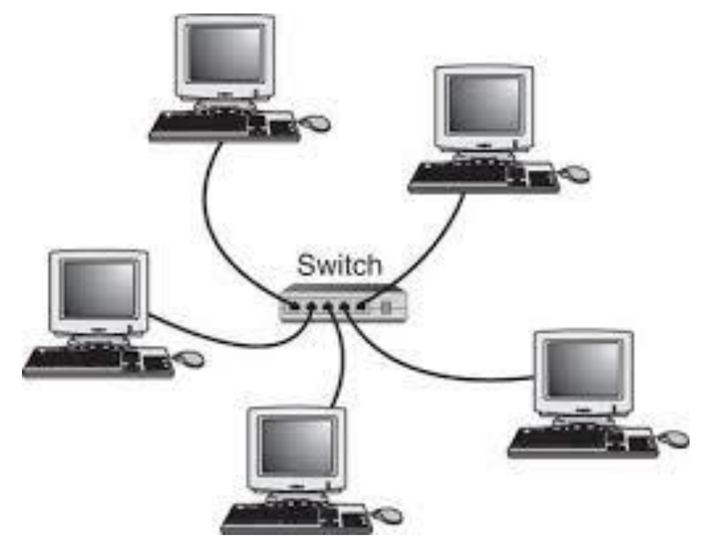
1- The possibility of exchanging data and programs among the net sets.
2- Sharing the Hardware such as (printer, scanner, different storage units …….etc.)
3- Data centralization such as the main branch of a bank has a computer with data base for the customers' accounts and connected to other computers in the other branches of the same bank in order to update the data at any branch of the bank.



Types of Networks

1- Local Area Network (LAN):

It is a limited network area inside a building or several near buildings. It is used at small institutions, schools, universities or at home.



2- Wide Area Network (WAN):

It is used to connect devices separated by long distances like cities, states or continents, so other methods are used to connect devices that are different from the local network. The Internet is considered a special type of the wide area networks

File Sharing

-File Sharing:

Sharing files is the process of spreading digitally stored information, such as documents, electronic books, computer software or multimedia (audio files, video or photos). This is to help accessing any of them through computer networks where any files can be shared as well as some of the devices such as a printer among different network devices.

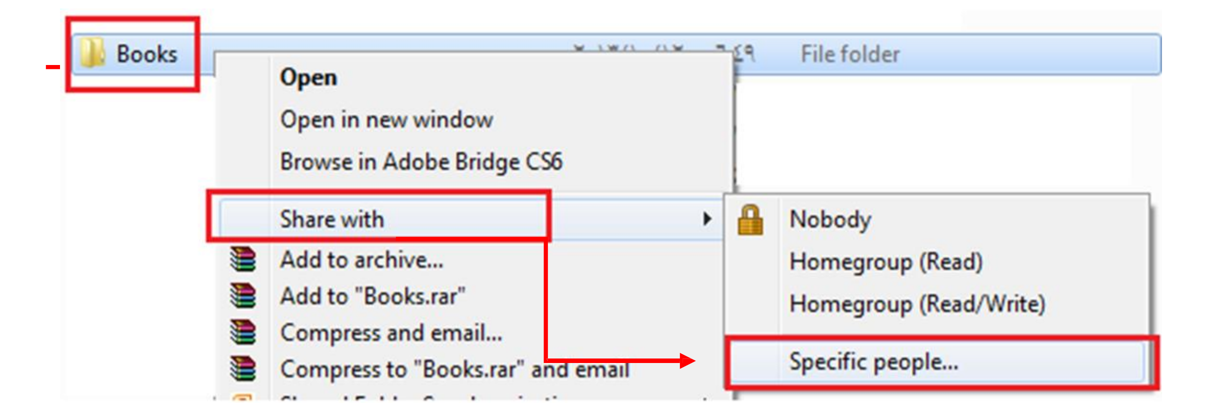
First, Sharing files in Windows Operating System:

To share a file or a group of files in Windows Operating system the following steps are to be followed:

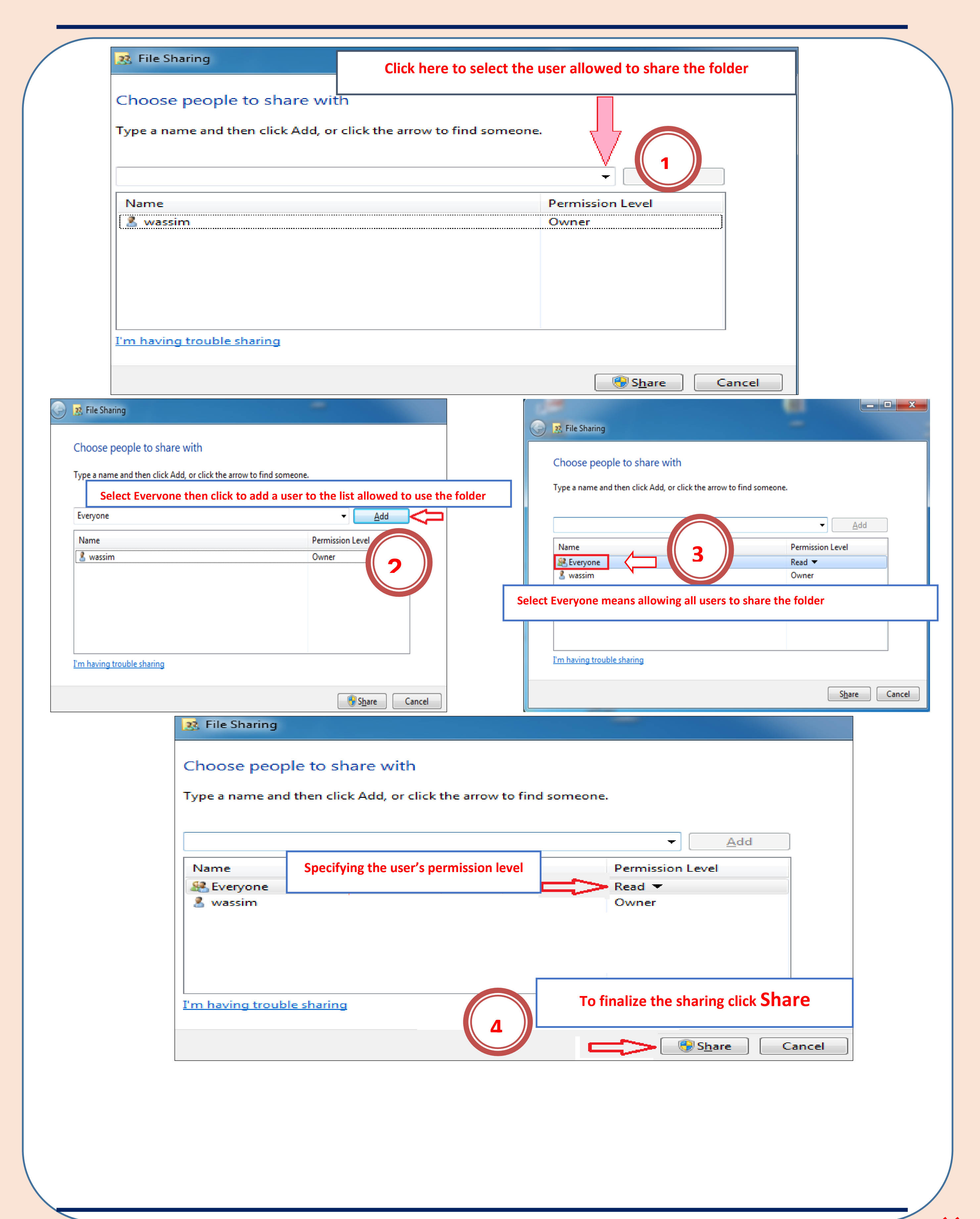
-Add the files in a folder.

-Select the folder to be shared (for example the folder, **Books**), right-click the mouse then select **Share with** from the context menu.

Note: It is important to configure all the network settings. (by your teacher).



Select the option **"Specific people"**, a dialogue box **File Sharing** appears (the following numbered pictures guide towards identifying the steps).


File Sharing
Click here to select the user allowed to share the folder
Choose people to share with
Type a name and then click Add, or click the arrow to find someone.
1
Name
Permission Level
wassim
Owner
I'm having trouble sharing
Share
Cancel
Select Evervone then click to add a user to the list allowed to use the folder
Everyone
Add
2
3
Everyone
Read
Select Everyone means allowing all users to share the folder
Specifying the user's permission level
To finalize the sharing click Share
4

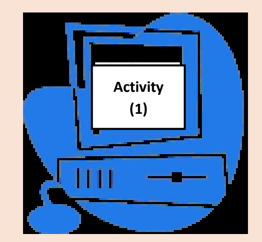
1 .Choose the user allowed to share the folder from the drop down list. Let the user be **Everyone** to allow all the users to share the specified folder.

2 .Press the button **add** to add this user to the list of users allowed to share.

3.Different permission can be assigned through **Permission level** where the choice **Read** means allowing reading the files only and the choice **Read/write** means allowing reading, modification or deletion.

4.Press **Share** to complete fulfilling sharing the folder with special validations**.**

To allow your colleagues to reach your available files through the network,they must search for your computer through the network. The search for your computer is to be through the name of the computer.



By the help of your teacheridentify the name of the computer you are working on.

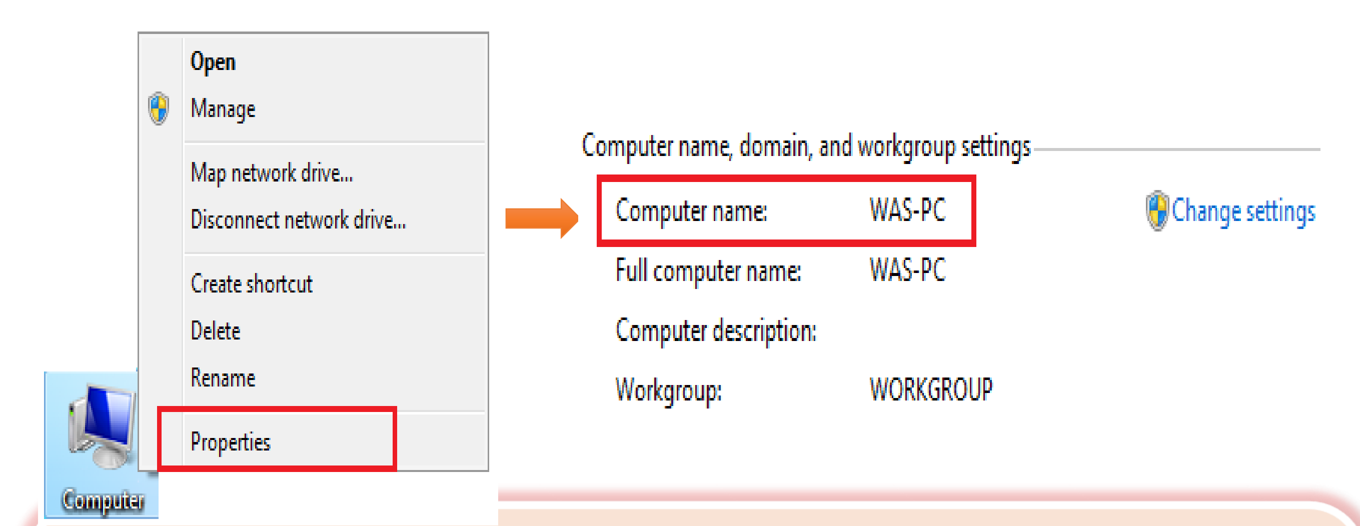
What is the name of your computer?

To know the name of your computer or the one whichyou are working onthese steps are to be followed:

1 .Show the context menu of the **Computer** icon on the desktop.

2 .Click on the option **Properties**.

3 .The name of the computer is displayed in the item **Computer name.**



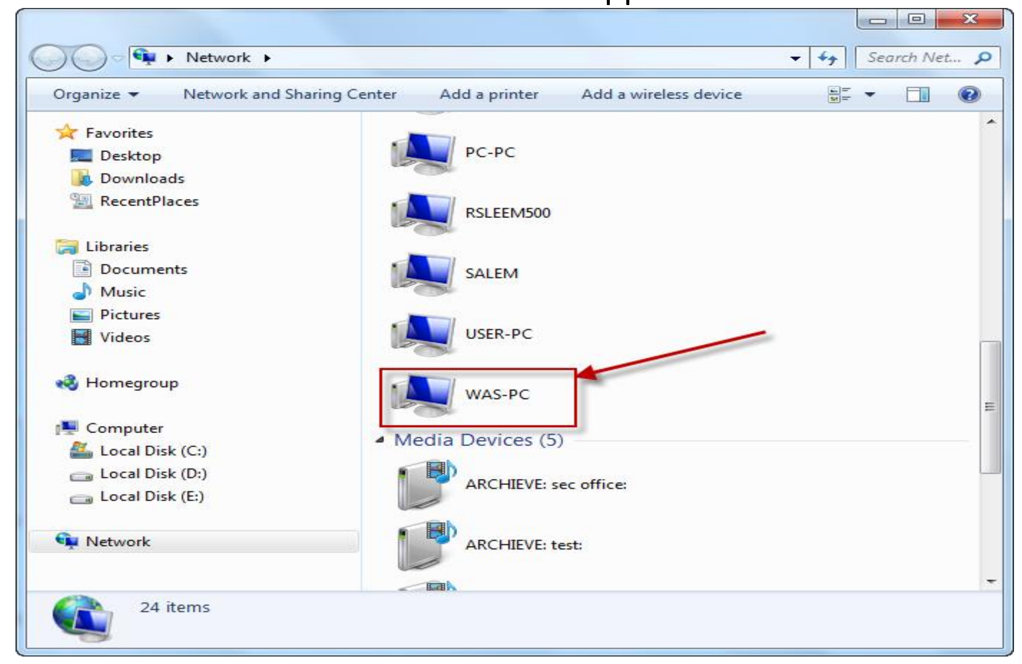
By the help of your teacher help your colleagues to identify the names of their computers.



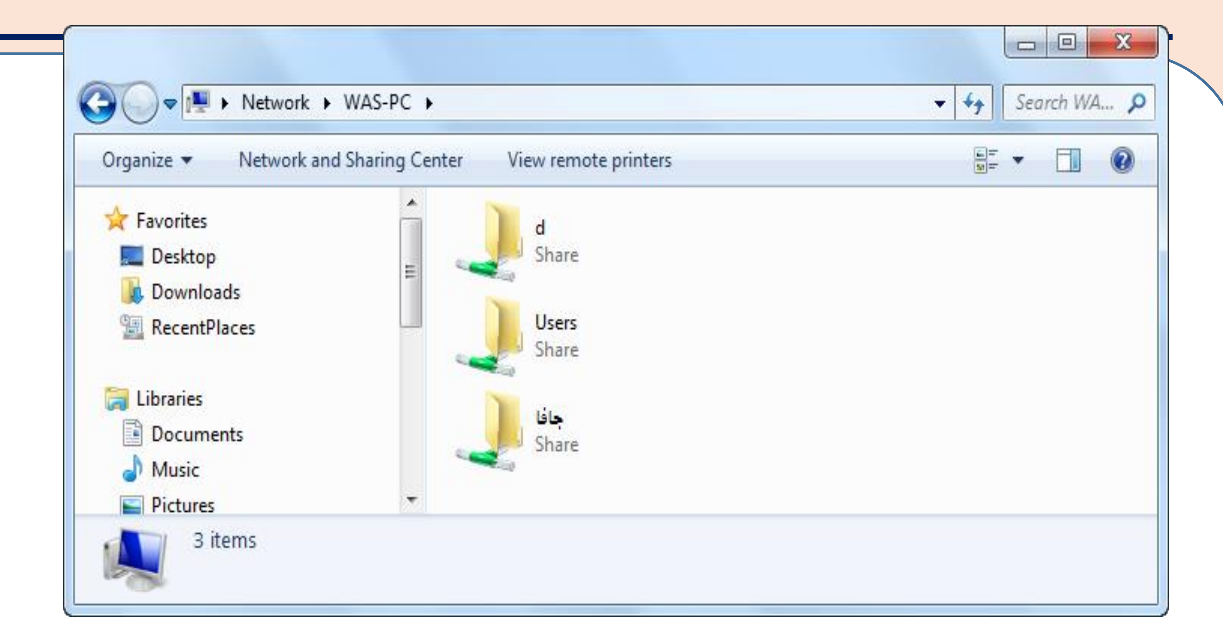
Accessing your colleagues' folder (folders) on a network

Accessing a folder (folders) which was shared through the network by your colleagues:

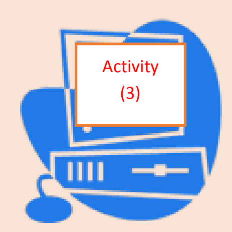
1- Double Click on the computer network Network icon (**Network**), the following window which includes all the computers of your colleagues who are connected to the network appears.



2- Search for the required device through its name. By double clicking the mouse, you can access the device (in the previous figure the name of the device is **WAS_PC**) then all the shared folders appear as shown in the following window:



After accessing the required device on the network, all the folders that were shared on the device appear.



By the help of your teacher do the following:

- create a folder, copy and paste some of the files to that folder.
- Share the folder to be available for the rest of your colleagues' devices on the network.
- Compare between **Read** and **Read/Write** (This is the permission available to deal with the folder while sharing).

First: to conduct this activity the teacher does the following:

-Create a folder entitled **Teacher**

-Through a word processing program create a text file that contains a table of students' data as follows: "number - the student's name - the email address of the student."

No.	Student's name	E-mail

- Save the file as **Email** in the folder **Teacher**.

-Share the folder **Teacher** with the permission of **Read/write**.

Second: students do the following through the network:

-Open the teacher's computer through the icon of the network.

-Open the folder **Teacher** which is shared with the permission of **Read/Write**

-Open the file entitled **Email** saved in the folder **Teacher** and register both the name and email address of the student.

- save the modifications of the file.

Important Note:

Using the permission of **Read/Write** may cause a problem as it allows others through the network to change the content shared as well as deleting it totally from your device which may cause damage, falsification or missing the information.

Second: Sharing files in Fedora Operating System

Sharing files in Fedora Operating System:

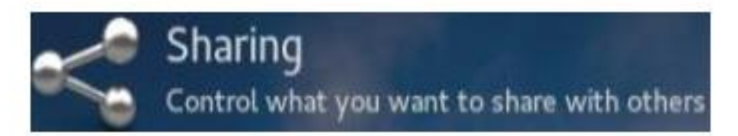
Implementing the file sharing in Fedora Operating System could be through allowing the users of the network to access a folder entitled **Public** in the folder **Home** through other computer devices connected to the same network.

Consequently, add all the files required for sharing in the Folder **Public**.

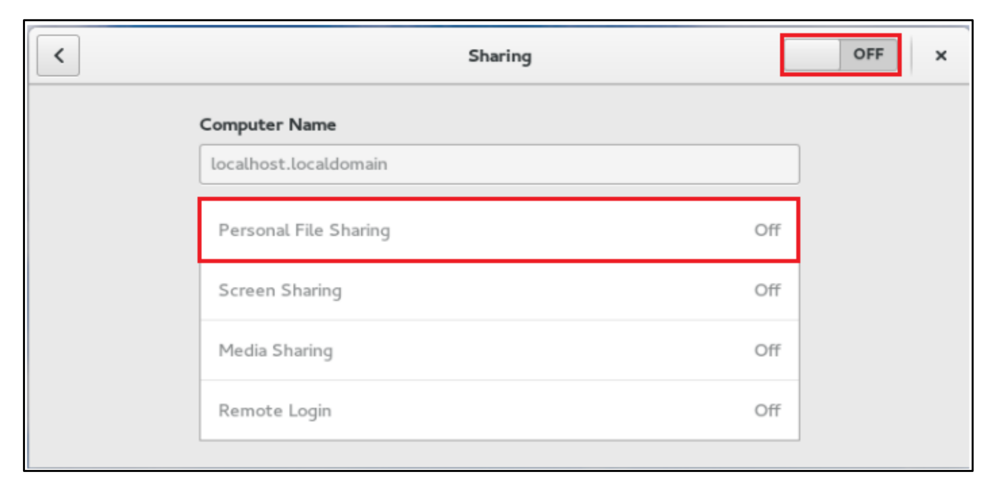
Settings required allowing others to access the contents of the folder Public:

1-Click **Activities** which appears on the top ribbon of Fedora opening screen.

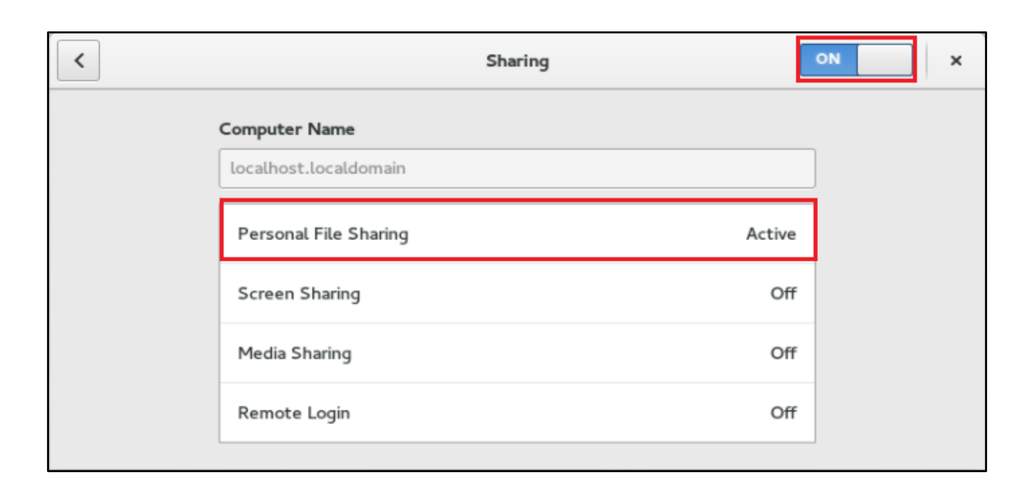
2-Start by writing the term **Sharing** in the search box so the **Sharing** icon appears



3-By clicking on the **Sharing** icon a window of configuring the sharing settings is shown.



1. Reset the sharing button on the top right of the window to the **ON** state
2. Reset **Personal File Sharing** also to the **Active** state.



By doing that other users of the same network can have access to your folder **Public** through their devices accordingly, they can access the files inside it.

Remember

The definition of a computer network and its importance:

It is linking two or more devices through a wired or wireless connection medium to share resources. (Data and devices).

The most important benefits of a computer network:

-the exchange of data and programs between the devices of the network.
-sharing some devices
-Centralizing the Data

The types of computer networks range:

- Local Area Network (LAN)
- Wide Area Network (WAN)

The concept of File Sharing

Sharing files is the process of spreading digitally stored information, such as documents, electronic books, computer software or multimedia (audio files, video or photos). This is to help accessing any of them through computer networks where any files can be shared as well as some of the devices such as a printer among different network devices.



Questions and exercises

Question 1: Mark (√) on the right statement and (x) on the wrong one:

1- Linking devices together within a computer network gives the possibility of sharing the data only( ) .

2- The Internet is considered a special type of wide area networks( ) .

3- The wide range network uses different methods than that of the local network to maintain connectivity( ) .

4- To share folders, your device must be connected to the network to help other users to reach it.( )

5- To share files in Windows Operating System, It is not necessary to be added in a folder( ) .

6- Specifying the user **Everyone** to share a folder in Windows Operating System means allowing all users to share it ( ) .

7- The **Computer** icon is used to access the shared folders in Windows Operating System.( )

8- Sharing files in the Fedora Operating System is to be implemented through allowing the network users to access a folder **Document**( ) .

9- To make the process of sharing files accessible in Fedora Operating System, the **sharing** setting must be set upon an **Off** state. ( )

Question 2: Complete the sentences using the words between brackets

(files - size - data - users - the name - research - devises)

1. One of the most important benefits of the network is centralizing ....
2. The local network is a limited network in the ....
3. Sharing .... is a process of spreading digitally stored information.
4. Searching for accessing required device on the network is to be through ....

5. It is possible to other .... to access the files that you shared through accessing your folder **Public**.

6. The term **Sharing** is written in t .... dialog box to access the **Sharing** icon**.**

Question 3: Answer the following questions:

- Mention the most important benefits of computer networks?
- The type of network differs according to the geographical area it occupies. Mention two types of networks range?
- Using the **Read/Write** option may cause a problem to users when sharing folders. Explain

Question 4: rearrange the following steps to share a folder in Windows Operating System:

( ) Choose the user allowed to share the folder.

( ) Choose the option **Specific people** then a dialogue box **File Sharing** appears.

( ) click **ADD to** add this user to the list of users who are allowed to share.

( ) open the context menu of the folder to choose the command **Share with**.

( ) Press **Share** to complete sharing the folder**.**

Answer questions through:

MS Word program in the file of "answers of the fourth lesson" in

(The template of Answers and projects).



A question to prepare for the next lesson:

Photo editing programs are used for creating and modifying pictures

What are these programs? How can they be used in modifying and creating the Pictures؟

Unit 2

Creating and Modifying Images



Lesson 1

Introduction to the Basics of Creating and Modifying Images

Objectives

Specific objectives (behavioral) by the end of this lesson the student will be able to:

- **recognize program of creating and modifying images (Gimp)**
- **use the Help menu to identify the contents of the creating and modifying images program interface.**
- **use some of the selection tools efficiently**

• creating and modifying images Programs

The programs of creating and modifying images used to assist in designing, creating and modifying different images. It enables the user to modify photos or drawings. There are many of those programs which are a closed and open source programs.

Activity

- Searching for some programs of creating and modifying images
- By the help of your teacher surf the Internet to search for some programs of creating and modifying images

- There are various programs to create and modify images

such as:



GIMP

.Open source



Adobe Photoshop

Closed source

Downloading the GIMP program to create and modify images

The GIMP program is an open and free source that allows creating and processing images.

Activity

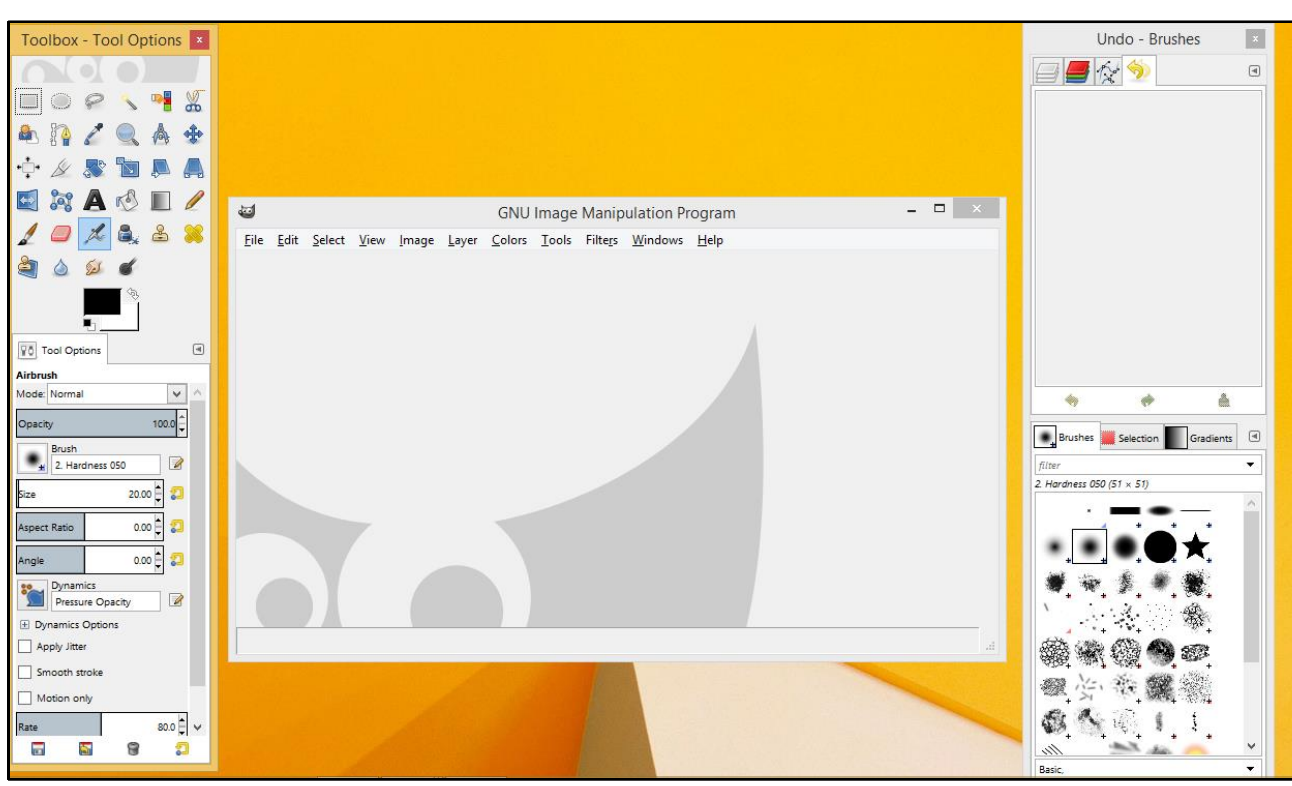
Download GIMP program

By the help of your teacher, download GIMP program.

The Interface of the GIMP program is available in two forms.

- Multi-window mode.

- Single window mode

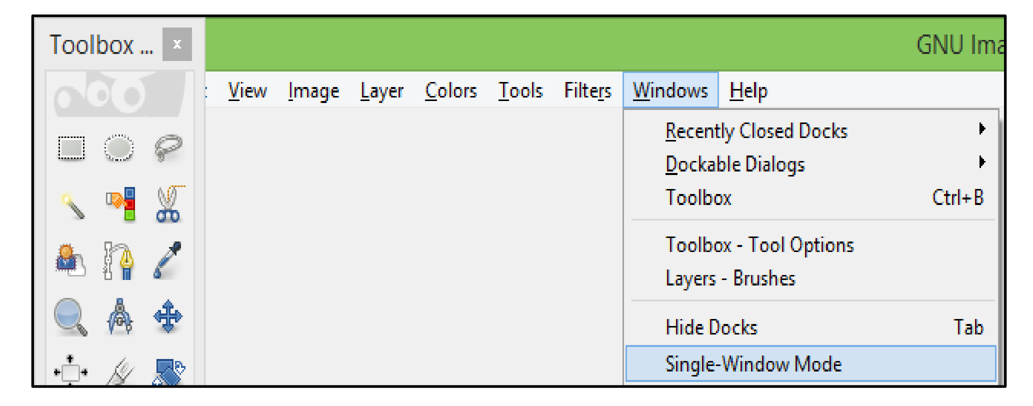


"The interface of the GIMP Program "A multi-window mode"

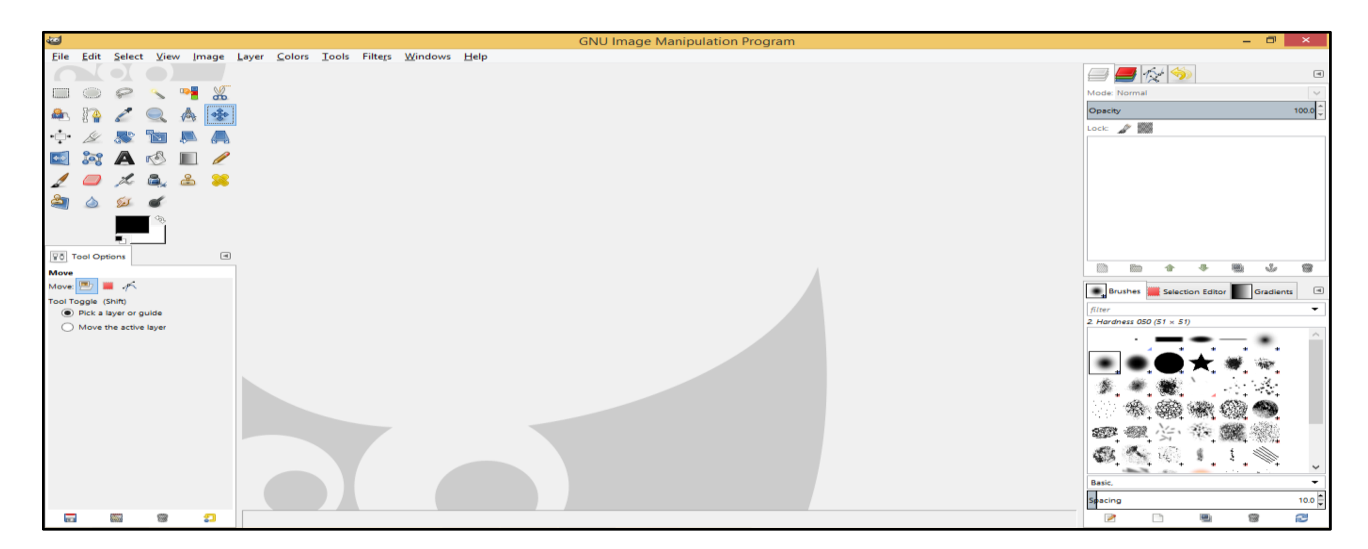
Important Note:

When opening the GIMP program for the first time,
it is usually on (the multi-window mode).

- To facsilite the using the program, It could be in the (Single window mode from the Windows *menu*: → Single-Window Mode



The program interface is shown in the mode (single window mode) as shown in the following figure:

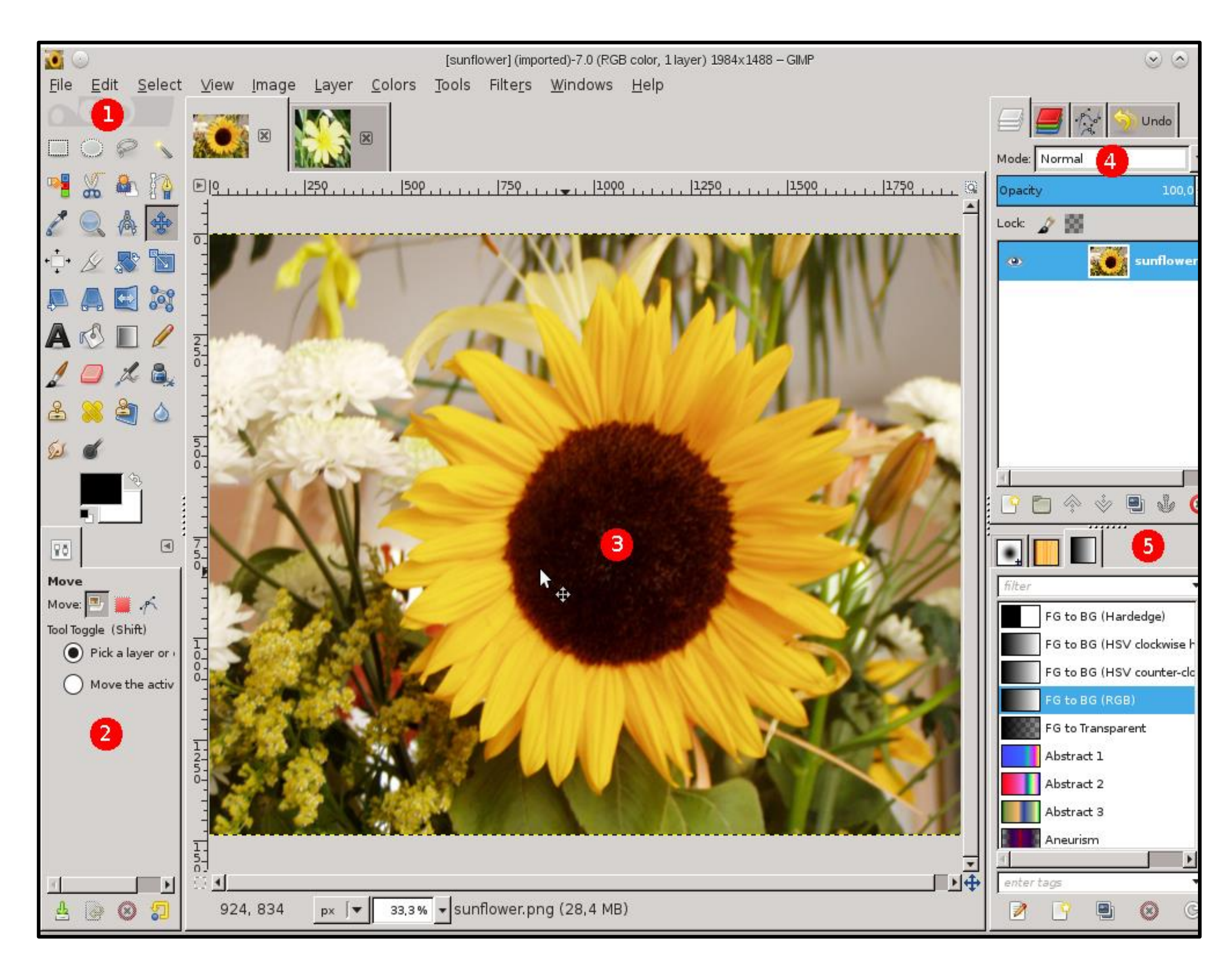


Note:

After closing the program and reopening it,

it remains in the (Single-Window Mode)

Identifying the contents of the GIMP program interface



"The interface of GIMP PROGRAM"

" Single-Window Mode" and opening one of its images .

The GIMP program default Interface consists of :

1.**The Main Toolbox:**

The "tool box" consists of many tools such as the selection tools, back and front color tools....

2 .**The Tool options dock:"**

It appears below the tool box and the options of the current tool (the selected) is shown in it.

3. **"Image windows:**
when opening more than one image, each image appears in a window which you can navigate between them.

4 **.(The Layers/Channels/paths/Undo) dock:**It contains several classifications, such as the **Layers tab.**

5 .**(Brushes/Patterns/Gradients) dock:** It contains the clssification of **Brushes**, Forms tab, **Gradients** color schemes tab.

Activity

To learn more about the program interface..

By the help of your teacher,

Open the program, to know more about the **GIMP** program do the following:

1- **Move** the mouse pointer on the tool required to be known and wait for moments, the **tooltip** related to it is shown as well as its shortcut key .

2- **To** know more about the tool select the tool, click **F1** from the keyboard to open the **Help** of this program. (*bearing in mind to have your computer connected to the Internet*)**.**

Using the F1 "help" to identify the contents of the Program Interface

The Main Toolbox is considered the program main window contents which consists of many tools such as the selection tools .Through the Help which appears by clicking **F1** from the keyboard you can identify the different contents of the program interface as well as get more information**.**

Activity



By the help of your teacher, open the **GIMP** do the following:

1- Click on one of the tools like "**Rectangle**"

2- Read the note about it .

3- Click on **F1** to show the program Help.

4- Identify some of the selection tools through the program Help.

Important notes:

1- In the case of closing one of those boxes or tabs (tool box, selction tools box,....) It can be restored through the **Windows** menus → **Recently Closed Docks**

2- To add , close or move one of the tabs in the box, click on the top right corner to open a drop-down menu and choose the required one.

For more information on the **GIMP**program to create and process imagesvisit the link http://docs.gimp.org/2.8/en of the program



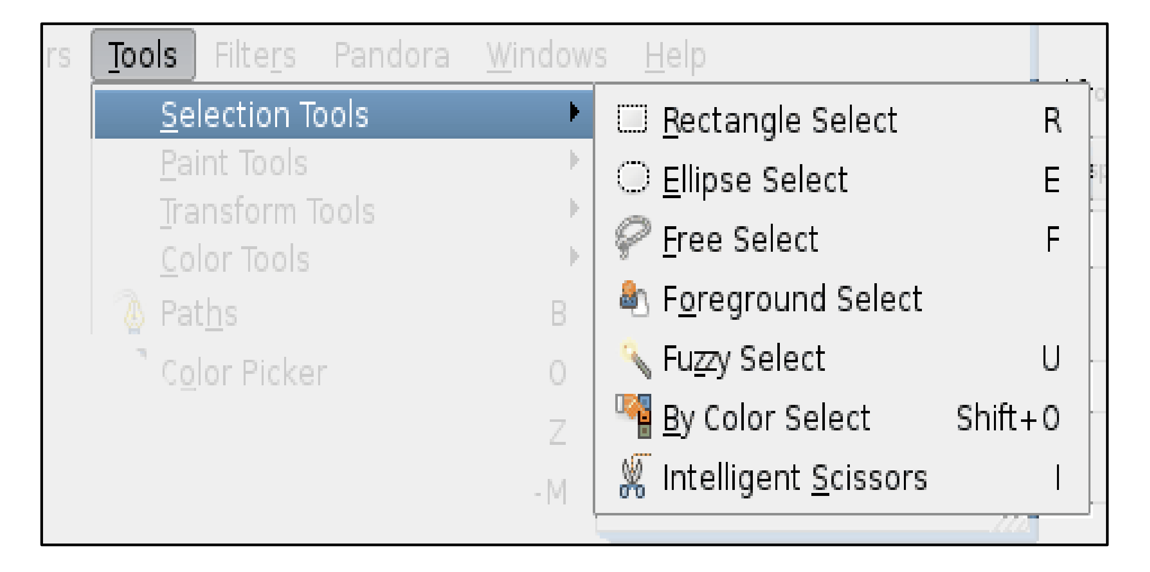
Selection Tools

Selection Tools

The selection tools are used to select a part or more of the image to deal with, like delete, cut, copy, paste, change the color of the selected part in order not to change the whole image.

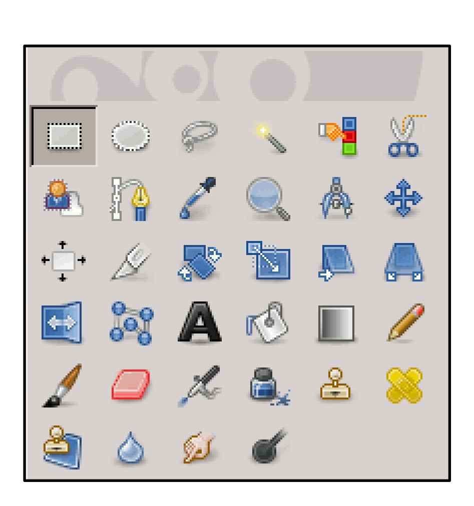
There are many selection tools used to specify part of the image, each one of them has a specific way to use it. The selection tools are shown in **The Main Toolbox** you can also access it through the **Tools** menu

From the **Tools** Menu select **Selection Tools**



1-Rectangle selection Tool

Choose the selection tool "**Rectangle**" by clicking on the tools box.
To select, click by pushing the image in the selected place so a rectangule is drawn as shown in the image



Tool Box



Select the image with the Rectangle tool

Activity

Select part of the image with the rectangle tool.

By the help of your teacher open the file of the previous image from the folder **"Images"** and do the following:

1- Use the selection tool "*Rectangle*" to select the part of the image.

2- Move the cursor inside and outside the selection. observing the shape of the cursor.

3- Click by pushing when the shape of the cursor is changed.

4- Deduce the difference between the different shapes of the cursor .

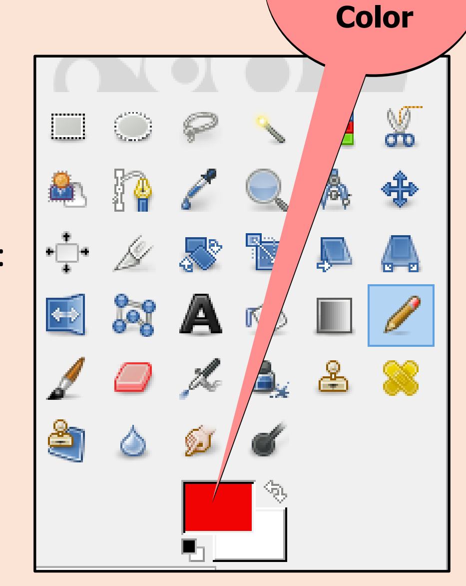
Note:

1- The cursor in the selection area that takes the shape of where you can move the selection rectangle.

2- the cursor outside the selection area that takes the shape of by clicking and pushing the selection place is changed.

Activity

Deducing the aim of the selection.



By the help of your teacher, do the following:

1- in the previous example, after using the selection tool **"Rectangle**" and select the image do the following:

- change the front color in of the tool box to Red
- choose the **"Pencil"** tool.
- try to draw the lines with the **"Pencil"** tool inside and outside the selection.
- write down your notes.-

Deduce the aim of using the "**Rectangle**" selection tools.

Note:



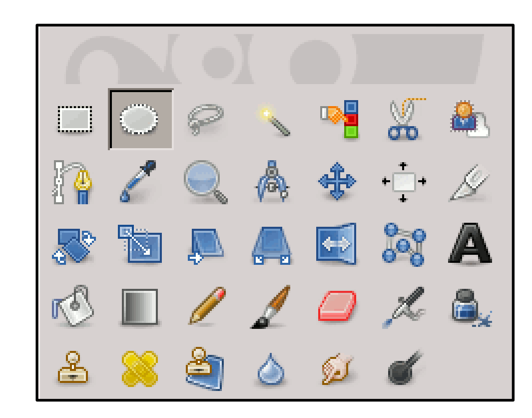
- draw red lines in the selected part only.
- to finish the selection and exit:

From the **Select** menu Select **None** or(from the keyboard, click the

(Shift key + CTRL + A).

2- Ellipse Selection Tool

The **Ellipse** select tool is used to select the oval shape of the image



Activity

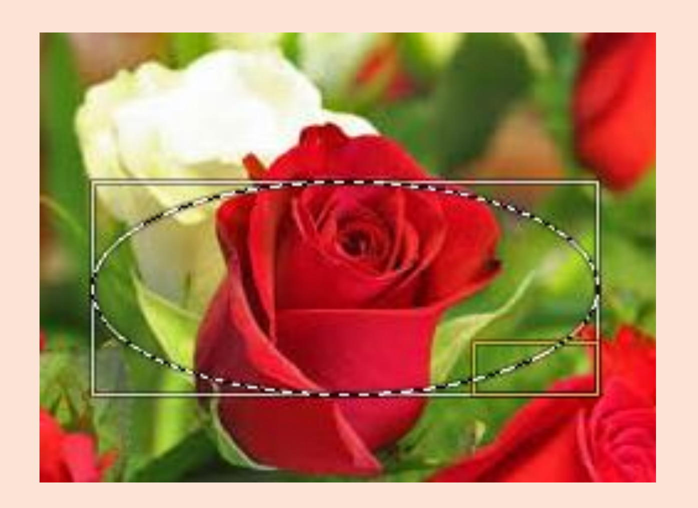
Select the oval shaped part of the Image using the **Ellipse** selection tool.

By the help of your teacher do the following steps:

1- **Open** the image file from the "images" folder.

2- **Select** the **Ellipse** selection tool.

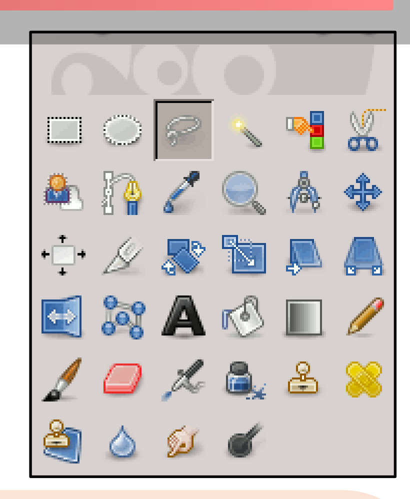
3- **Select** part of the image using the **Ellipse** selection tool**.**



The image after Selection

3- Lasso free selection Tool

The **Lasso** Free Selection tool is used to select an irregular part of the image in a free way.



Activity

Select a part of the Image using the Lasso tool

By the help of your teacher use a free selection tool to select a part of the image as shown in the image :

1- **Use** the image of the previous activity.

2- **Select** a part of the image using **Lasso** free selection tool

3- **from** the **Edit** menu choose Cut.

Write down your notes.



The image after Selection

Note:

- a selected part cut.
- to remove the selection, from the **Select** menu select **None**

4- Fuzzy Selection (Magic Wand) tool

The **Magic wand** tool or **Fuzzy Selection tool** is used to specify similar color schemes areas of the image.



Activity

Specifying similar color schemes areas of the image with the **Fuzzy** tool.

By the help of your teacher do the following:

1- Open the image file from the folder "images"

2- Select the similar color schemes of the Image using the **Fuzzy tool**.

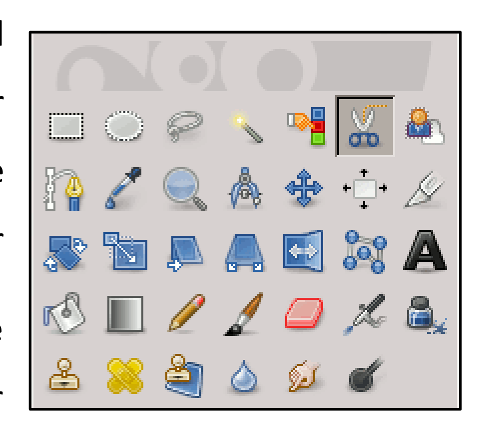


The image after specifying using Fuzzy Selection



The image before Selection

5- Smart Scissors Selection tool



The **Smart Scissors** selection tool is considered a useful tool when trying to specify an area specified or distinguished with a clear and strong color where the colors of the borders are changed in a clear manner

To use this tool, click on the points by pushing the area with distinguished color from the rest of the other ones.

Activity

Specifying part of the image tool using the **smart Scissors**

By the help of your teacher do the following steps:

1- **Open** the image file from the folder "images."

2- **Use** the **Smart Scissors** to make points by clicking and pushing on the area of distinguished color from the rest (the borders of the flower) as shown in the following figure:



The image while specifying it



The image after completing specifying it.

Remember

The **GIMP** program is an open and free source program that allows creating and processing images.

When opening the **GIMP** program for the first time it is usually on (the multi-window mode).

- To facilite using the program, It could be in the (Single window mode from the **Windows** menu → Single-Window Mode

The GIMP program default Interface consists of **:**

1.The Main Toolbox .

2 . The Tool options Dock.

3 .mage windows.

4 . (The Layers/Channels/paths/Undo) Dock.

5. (Brushes/Patterns/Gradients) Dock.

To know more about the tool select it, click **F1** from the keyboard to open the **Help** of this program

-To restore any closed tabs:

Windows menu **→ Recently Closed Docks**

- The selection tools are used to select a part or more of the image. use the selection tools to select one or more of the image,

- The selection tools (**Rectangle** tool, **Ellipse** tool, Free Selection (**Lasso**), **Magic Wand** tool or **Fuzzy** Selection and **Smart Scissors**)



Questions and Exercises

Question1: Mark (√) on the right statement and (x) on the wrong one:

1- On opening the **GIMP** program for the first time the program is shown in the multi *window-window* mode ( ).

2- For more information about one of the tools click **F5** from the keyboard ( ).

3- Use the "**Selection**" tool to draw the image freely ( ).

4- The "**Pencil tool**" is considered one of the selection tools ( ).

5- The **"Ellipse"** selection tool is used to select an oval shape of the image. ( ).

Question2: Complete the following:

1- To delete the selection choose ....

2- The "**Lasso**" Free Selection tool is used to select ....

3- **The "Magic wand"** tool or **"Fuzzy Selection"** is used to select ....

4- The " **smart Scissors** " selection tool is used to select.............

Answer questions through:
MS Word program in the file of "answers of the first lesson" in
(The template of Answers and projects).



A question to prepare for the next lesson:

After identifying some of the selection tools and how to use them,

How can you use the selection tools to create a new image?



Designing and Creating New Images

Objectives

Specific objectives (behavioral) by the end of this lesson a student will be able to:

* create a new image file.

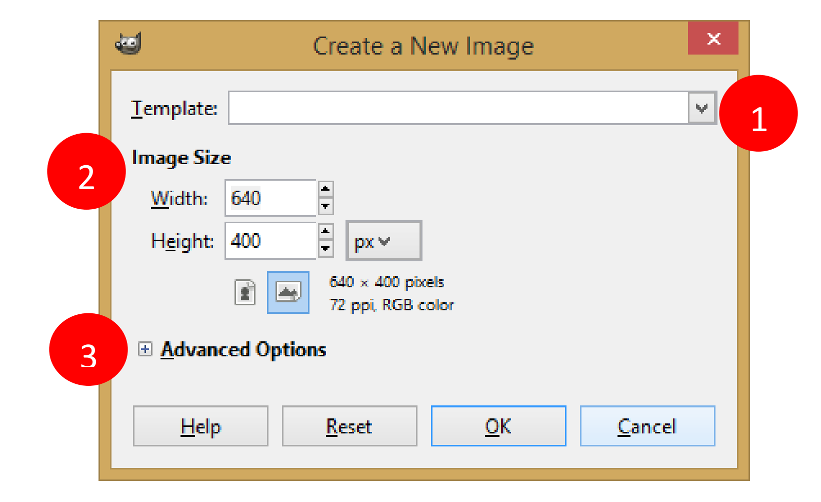
* design simple drawings.

* save the image file and all its data using the option Save.

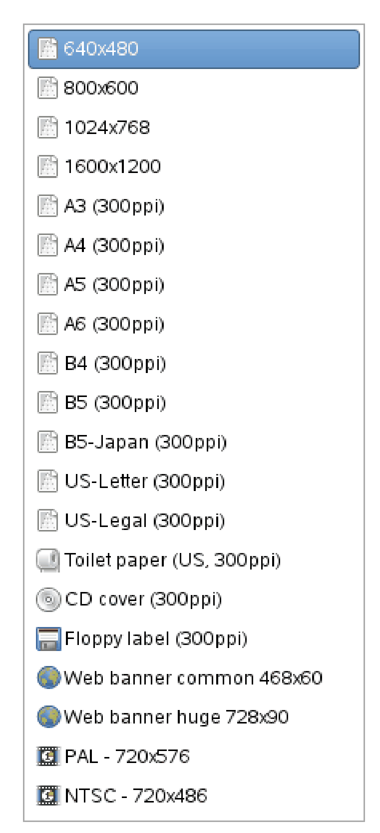
To create a new image file (File *menu* ⟶ new)

To create a new image file **(New Image)** from the **File** menu choose **New, a** dialogue box appears which requests the dimensions of the new image (**length** and **width**), its resolution, color scheme and its filling color

To create a new image file **File** *menu* ⟶ **New**



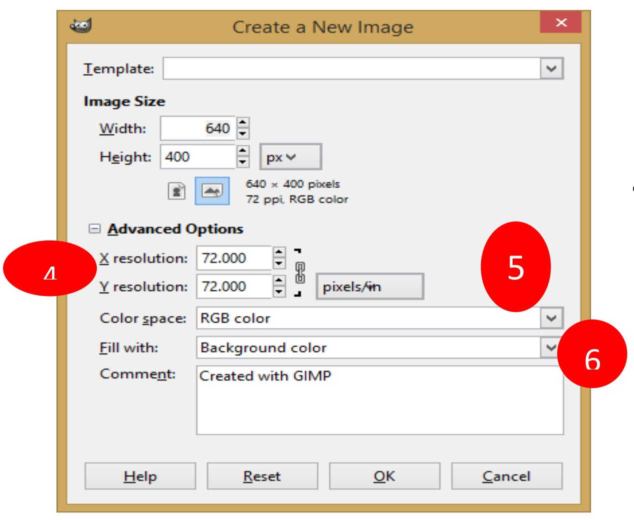
The dialogue box of creating a new image



1-Template: Templates are ready made designs previously prepared of the dimensions and the resolution of the picture. by clicking on the drop down list a template appears to select from instead of selecting manually.

2- **Image Size**: To identify the dimensions of the new image (**length** and **width**) click on the arrows .

3- **Advanced Options** :by clicking on **+** sign The rest of the dialogue box appears as follows:



The dialog box to create a new image

4- **X resolution and Y resolution:** This is used to determine the image resolution when printing (and it does not affect the picture dimension)

5- **Color Space:** This is used to determine the Image color system RGB using red, green and blue colors **or** that of the grayscale using black and **white** colors and the gradients of grey between them.

6- **Fill with:** issued to specify the new image filling color which can be:

- **Background Color** which appears in the **Toolbox**.
- **Foreground Color** which appears in the **Toolbox**.
- **White** filling the image in white color.
- **Transparency** the transparency of the image is to make the background of the image transparent.

Create a new image file using **Template** to specify the dimensions, background color and the filling color of the new image.

Activity

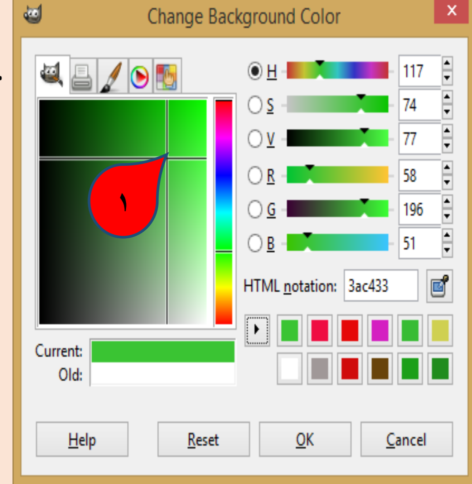
By the help of your teacher create a new image of (600 X 800) and fill its **background color.**

The color of the current background

In the opposite figure the color of the background is shown in white.

-to choose another color of the background click on the toolbox of Background Color in the dialogue box.

-To open a dialogue box to change the background color "**Change Background Color"** do the following:



1- **click** by pulling to change the current background color.

2. **Current**: Is the color of the current background.

3. Click **"OK".**

- From the **File** Menu Choose **New**.

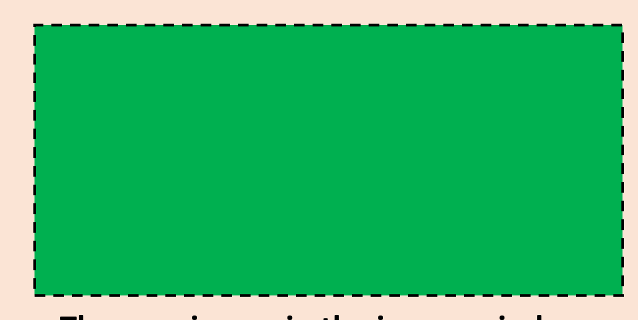
A dialogue box of a new image appears to choose the following:

- From **Template** Choose **600 X 800**

- From **Fill with** Choose **Background Color**.

- Click "OK".

- The new image is shown in this Figure.



The new image in the image window

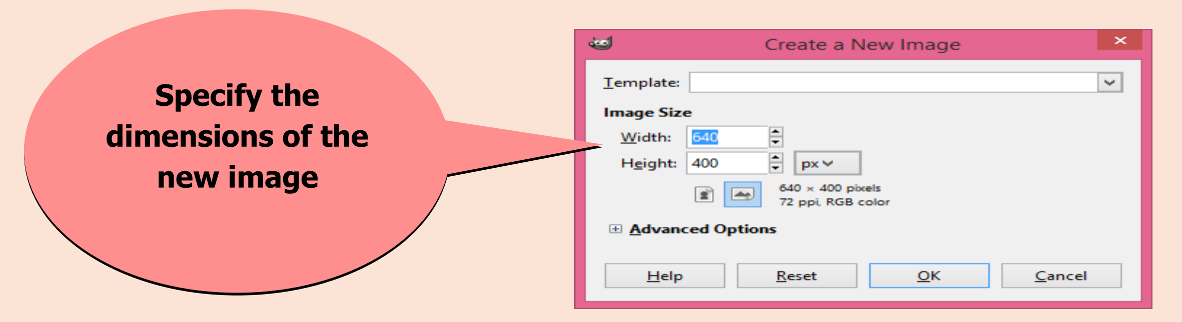
Design simple Drawings

Activity

By the help of your teacher use one of the selection tools to try implementing the next drawing:

Steps of the activity

-Create a new file from the **File** menu and select **New**, a dialogue box appears to select the dimensions of the new image.



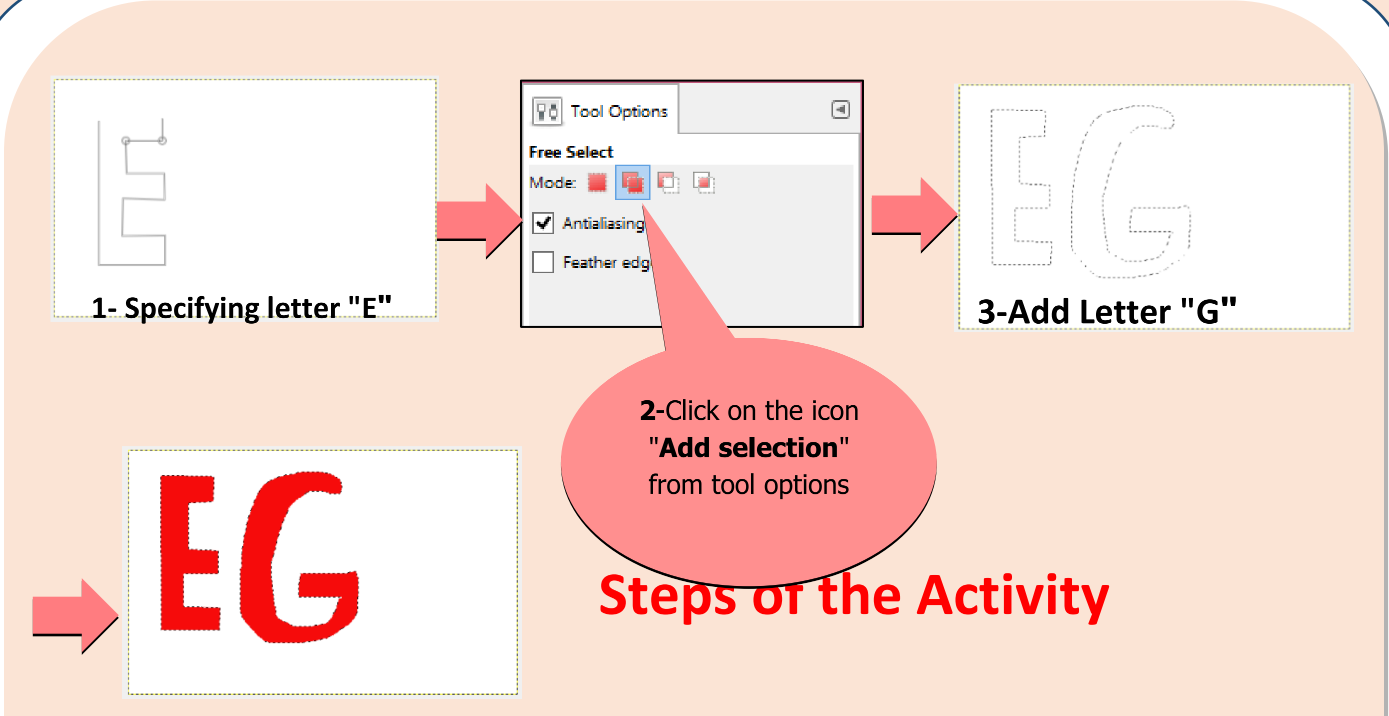
Choose the "**lasso**" free selection tool to draw the abbreviation "EG" as follows:

1- To draw the first letter "**E**" click by pulling the free selection tool until the completion of drawing the letter.

2- To draw the second Letter "**G**", it should be noted that when you click by pulling to draw it the first letter "**E**" disappears.

3- To keep the previous specified selection of the "**Lasso**" free selection tool click on to **"Add to current Select"**.

4. Choose the color filling **"Bucket Fill"** Tool, click inside this selection to fill it with the front color.

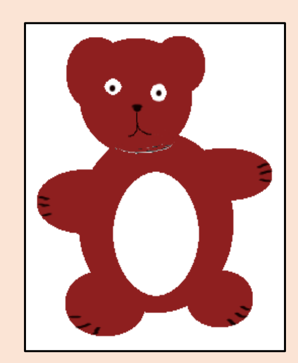


Steps of the Activity

4 -Select the "Bucket" tool to fill the selection with color.

Activity

By the help of your teacher, draw the following figure:

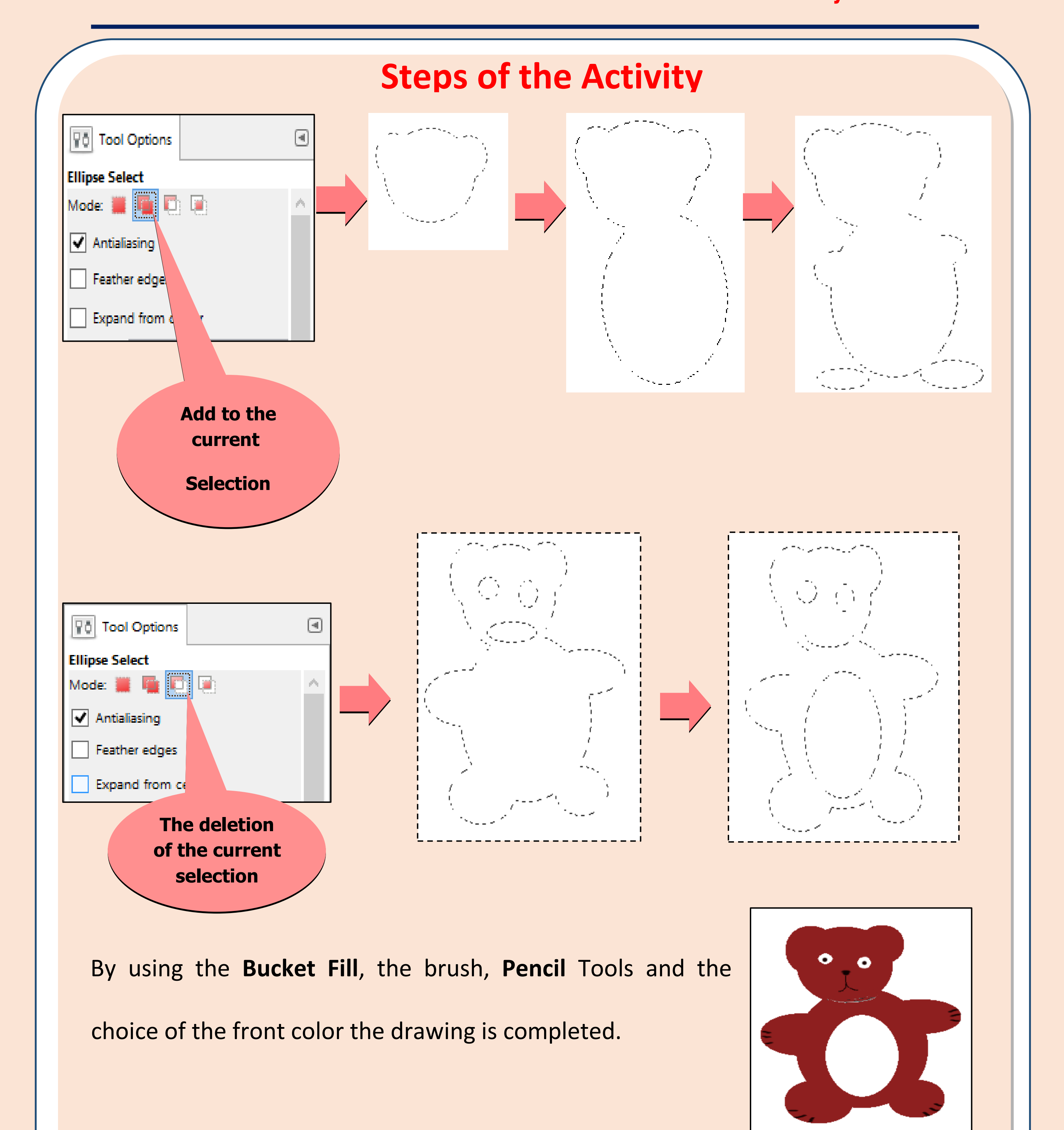


To draw the figure you must try the following:

- A careful look to the figure or image.
- Try to guess the tools that will be used.
- Identify the starting point.

Note that: the figure is composed of a group of oval shapes, thus the tools **Ellipase**, **Bucket Fill** and **Pencil** Tools can be used.

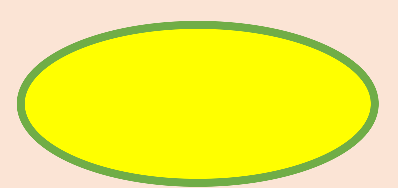
Steps of the Activity



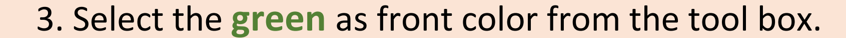
By using the **Bucket Fill**, the brush, **Pencil** Tools and the choice of the front color the drawing is completed.

Activity

Draw an oval shape with **green** colored borders and fill it with a yellow color.

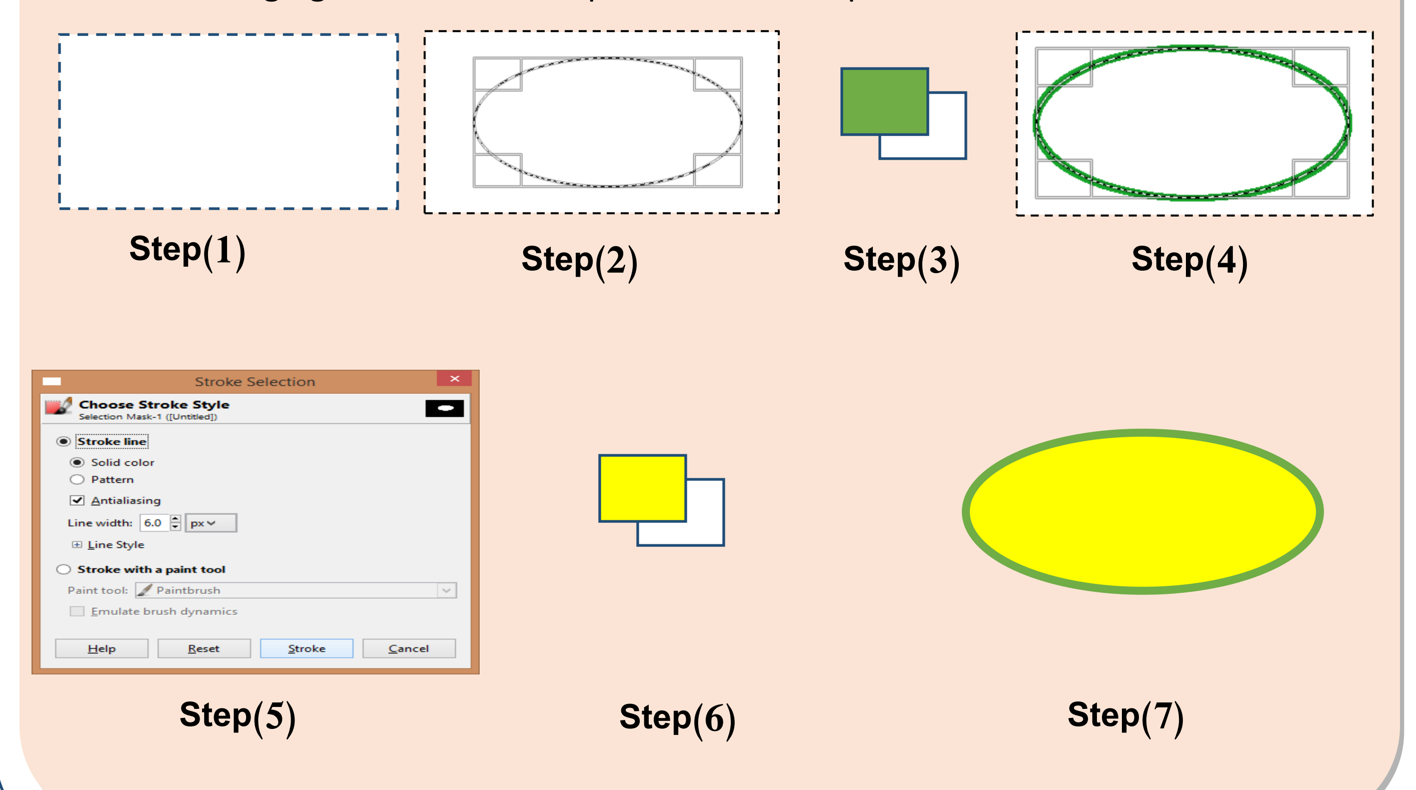


1. Open a new file image from **File** *menu* → **new.**
2. Select the **Ellipse** selection tool.
3. Select the **green** as front color from the tool box.



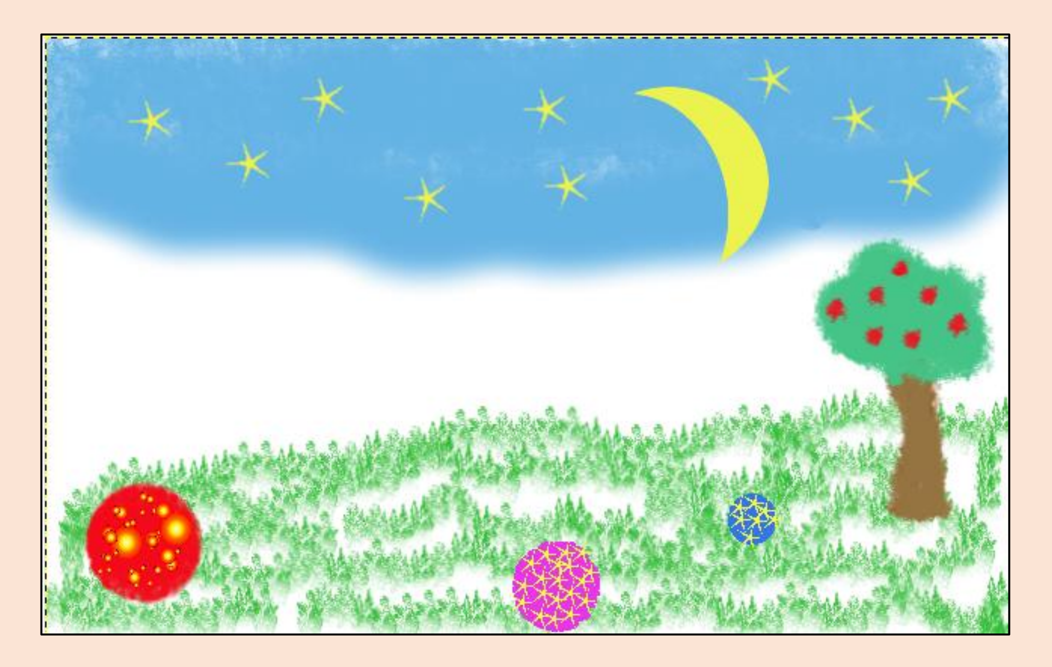
4. From the **Edit** *menu* choose **Stroke Selection, a "Stroke Selection**" dialog box appears
5. Select the line width from **"Line width"** from the dialog box. Click on **"Stroke",** the borders of the oval shape are drawn with the green color
6. Select the yellow as front color from the tool box.
7. From the **Edit** *menu* select **Fill with FG Color**; the selection is filled with the front color with yellow.

The following figure shows the implementation steps:



Activity

By the help of your teacher try drawing the following:



Using the following tools:

- **Ellipse Select** tool.
- **Pencil** Tool.
- The **Lasso** free selection tool.
- **Bucket Fill** Tool.

Save Image

After finishing the drawing the image, the stage of saving it in the file comes.

Save Image through the command **Save** from the **File** menu:

The command **Save** is used from the **File** menu, since the **GIMP** program offers the extension **XCF** to the image file, to save all the information about the image (Layers. Transparency) This extension is useful in case of reopening the file of the image or modifying it.

Remember

create a new image file through: **File** *menu* ⟶ New.

In the dialogue box to create a new image:

1-**Templates**: are previously ready-made designs prepared of the dimensions and the resolution of the image**.**

2-**Image Size :to** identify the dimensions of the new image (length and width) by clicking on the arrows .

3-**Advanced Options :** to create the new image

4-**resolution** : used to determine the image accuracy when printing

5-**Color Space**:This is used to determine the Image color scheme **RGB** or **grayscale**

6- **Fill with**: It is used to specify the new image filling color which can be:

-Background Color

-Foreground Color

-White filling the image in white color.

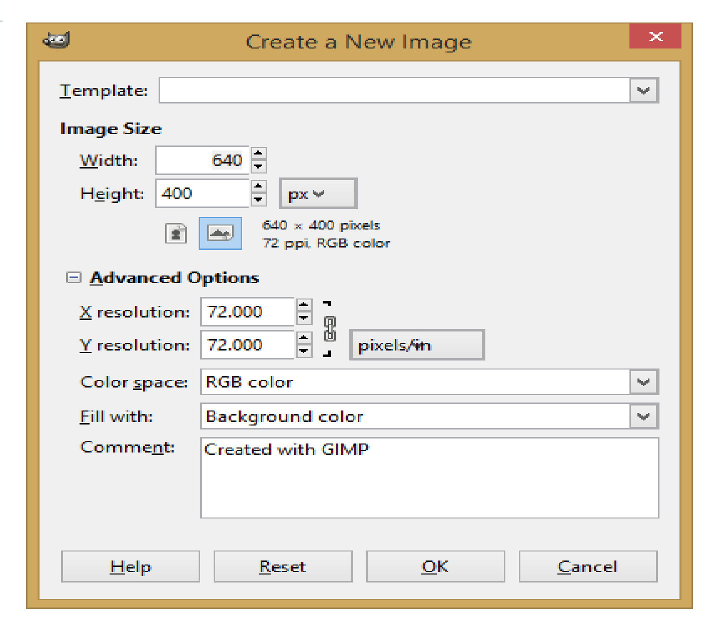
-Transparency to make the image background transparent.

When save the image by the command **Save** from the **File** menu:

The **GIMP** program offers the extension **XCF** to the image file, to save all the information about the image (Layers. Transparency. **)..**



Questions and exercises



Complete the following statements:

First: To create a new image the following steps should be followed

1. Identify the dimensions of the new image.
2. ....
3. ....
4. ....
5. ....
6. ....

Second:

save command is used from the **File** menu, where the **GIMP** program offers ....

Answer questions through:

MS Word program in the file of "answers of the second lesson" in

(The template of Answers and projects).



A question to prepare for the next lesson:

The drawing tools are used for different purposes like hand drawing and for gradation of colors.

What are the drawing tools? How could they be used?



Lesson 3

Paint tools

Objectives

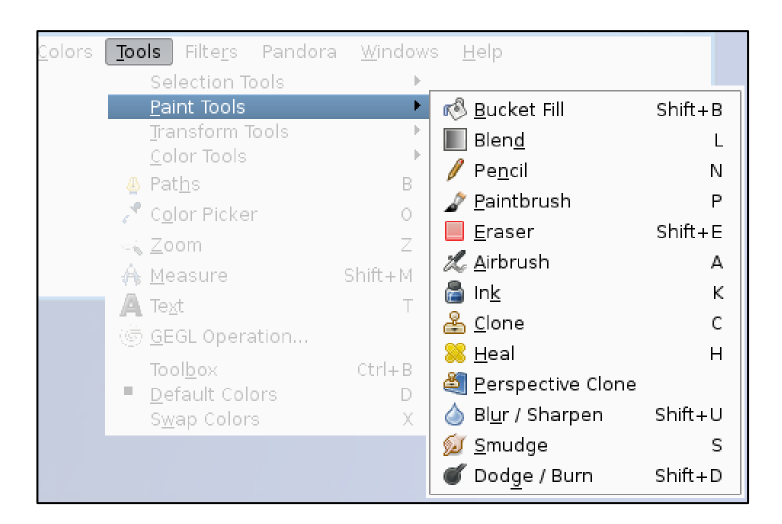
Specific objectives (behavioral) by the end of this lesson the student will be able to:

* draw a free shape.
* draw gradient color scheme.
* copy part of the picture in the same layer.
* repair the defects of the image color scheme.

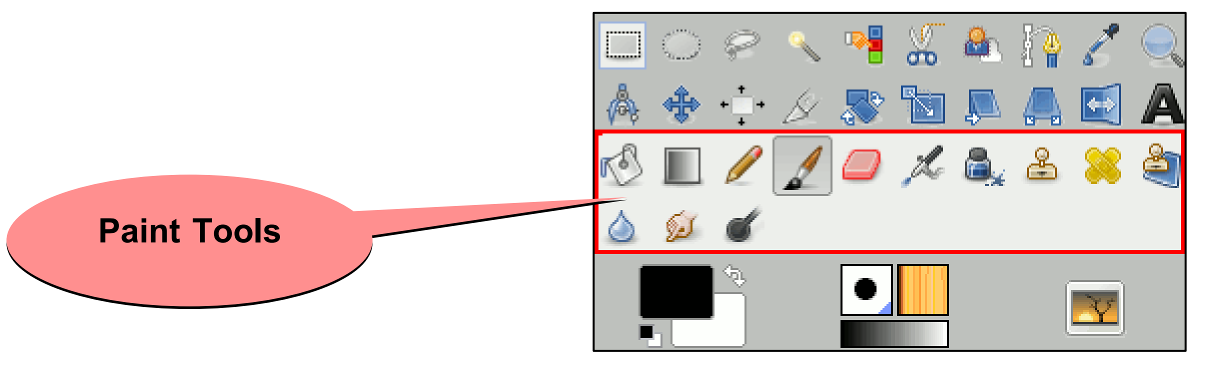
Paint Tools

Paint tools are used for different drawing purposes such as free hand drawing, create gradient color scheme, merge the current color with the surrounding colors, copy part of the picture in another place in the same image...

The Paint Tools that can be accessed from the **Tools** Menu



Or from the Tools Box



Paint Tools

1- Pencil Tool



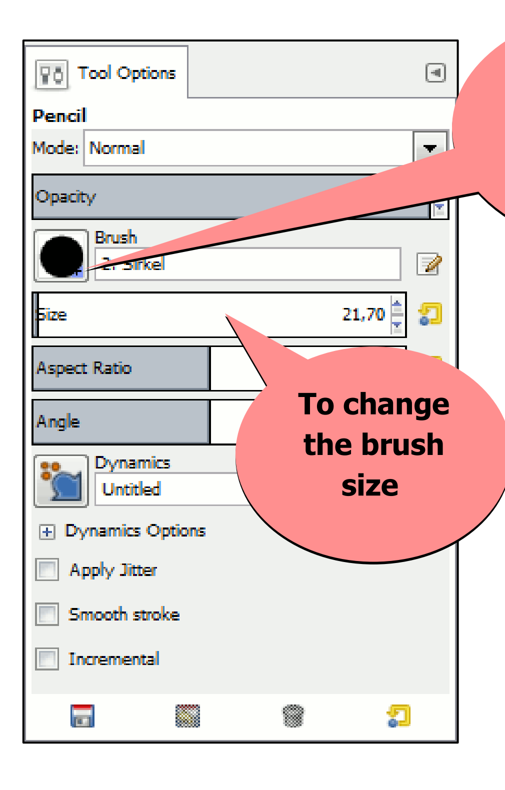
The pen in the **"Pencil"** tool is used for free hand drawing

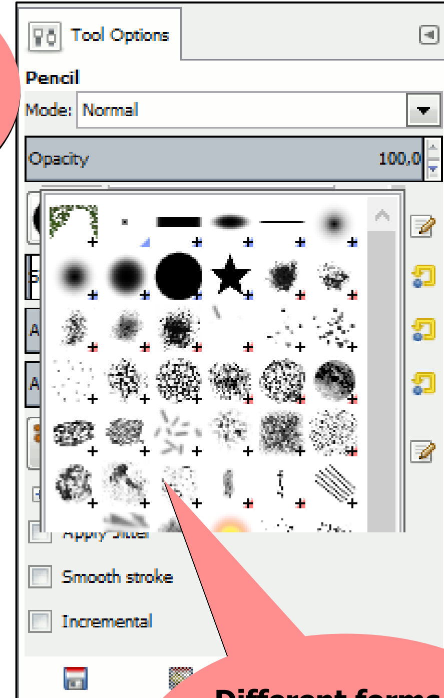
Activity

By the help of your teacher, identify the options tool of the "**Pencil tool**", to find out how to change the size and the shape of the brush as well as other uses.

-choose the shape of the brush.

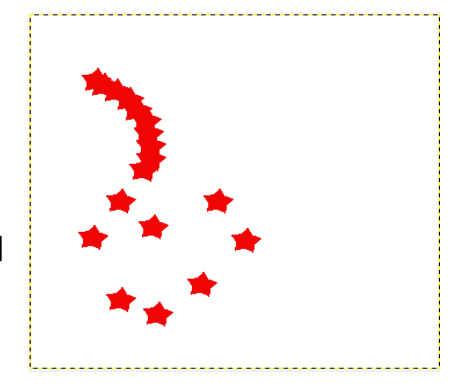
-choose an appropriate brush size





Activity

Drawing using the "**Pencil**" tool



By the help of your teacher draw the following figure

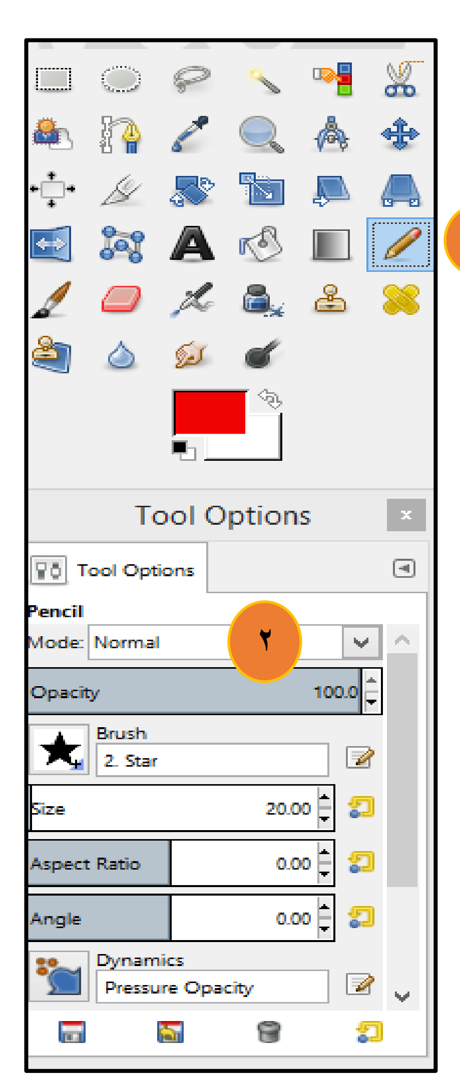
1- choose the **"Pencil tool"**.

2- Modify the options of the tool to change the size and shape of the brush.

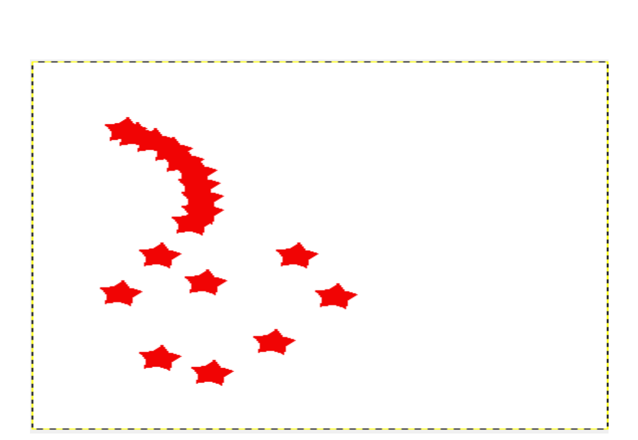
3- choose Foreground color "red".

1-choose the front color from the tools box.

2-select the shape and size of the brush used from the **Tool Options** of the **pencil tool**



Pencil tool options



The drawing in the image window

2- Blend Tool

The gradient color scheme **Blend tool** is used to make color gradation using the front or back colors. Modifications are made to the options of the tool to get the gradient color scheme required.

Activity

By the help of your teacher do the following:

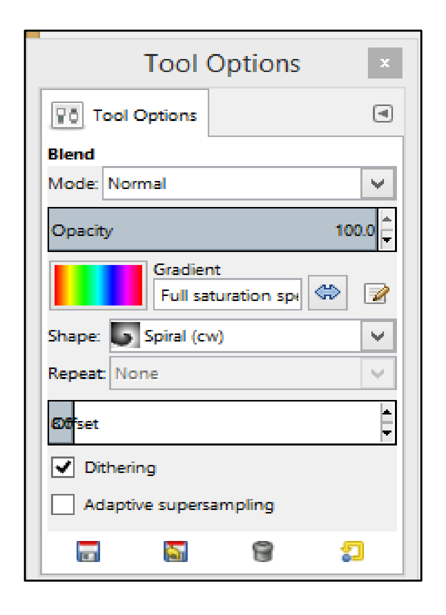
-create a new file.

-choose the **Blend** tool.

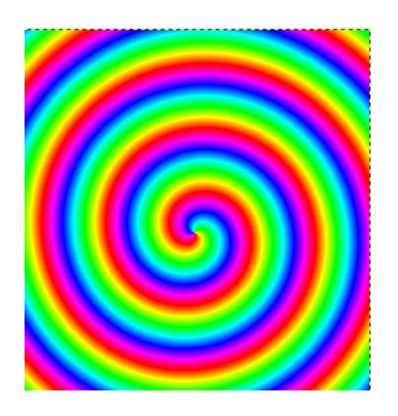
-choose the shape of the gradient color scheme.

-select the direction of the gradient color scheme.

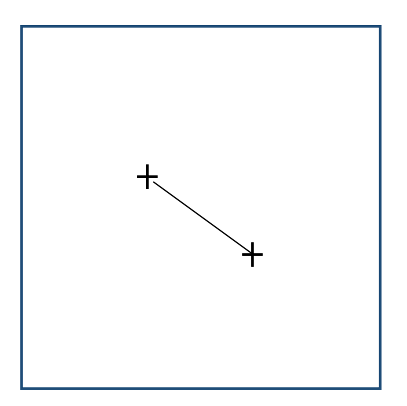
-Create a gradient color scheme by clicking and pulling in the image window.



The options of the gradient color scheme



The gradient color scheme after drawing



By clicking and pulling to create the gradient color scheme

3- Smudge Tool



The **Smudge Tool** is used to mix the current color with the surrounding colors in the area of moving the tool.

Activity

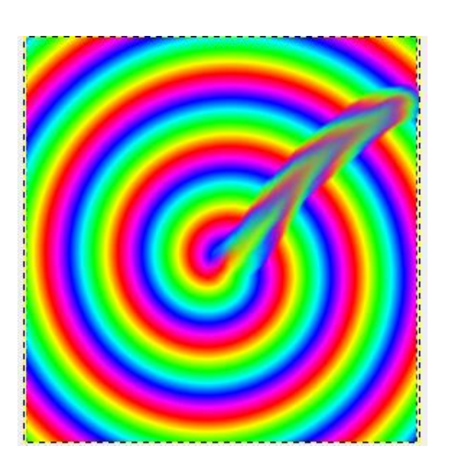
By the help of your teacher, try to do the following:

-Use the Picture of the previous activity.

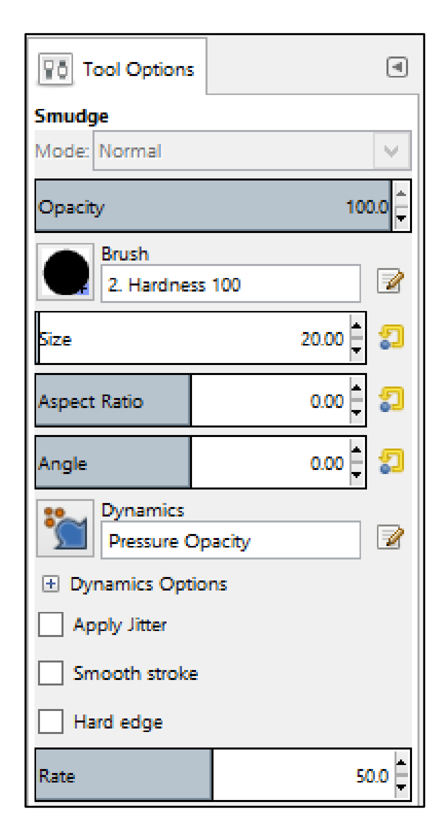
-Choose **Smudge** tool.

-Choose the (shape and size of the brush) from the tools options.

-by clicking and pulling the tool in the picture to mix the current color with the surrounding colors.

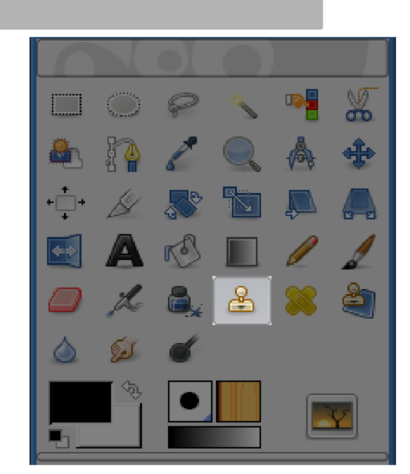


The picture after using the **smudge**



The Tool Options

4- Clone Tool



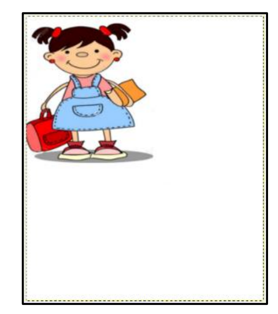
The **Clone** tool is used to copy part of the picture in another place (in the same image layer). It is used to modify and reform the images.

The steps of using the **Clone** tool:

- look at the picture to know the part required to be copied.
- Choose the **Clone** tool.
- stop the cursor at the beginning of the place required to be copied
- press the "**CTRL**" key on the keyboard (the cursor shape changes to)
- move to the required place to add the copied version.
- click by pulling to create the copied version.
- do not stop clicking and pulling till you complete the copying.

Activity

By the help of your teacher use the "**Clone"** tool try to copy part of the picture as follows:



original image.



The picture after copying using clone tool

Steps in implementing the Activity

1-Select the starting point of the copying by pressing the **Ctrl** key







2- Move to the place of putting new copy

3- Press by pulling the copied version then continue pressing till you finalize the copied version

Steps of copying using the **Clone** tool

Important notes

-While copying click by pulling in the copying place till completing the required copied part.

- By stopping to click by pulling with the cursor then re-clicking by pulling, copying occurs from the selected starting point.

- To control the copying process change the size and shape of the **brush** used from the **Clone** tool options.

Activity

By the help of your teacher try to do the following:

-Check the picture 1 and picture 2 well to identify the differences between them.

-Use a **Clone** tool to make picture 1 (*original picture*) look like picture 2.

-Use the **Smudge** tool to mix and blend the color with the surrounding Colors



picture 1 (the original image)



picture 2 the image after modification

Steps in the implementation of the Activity



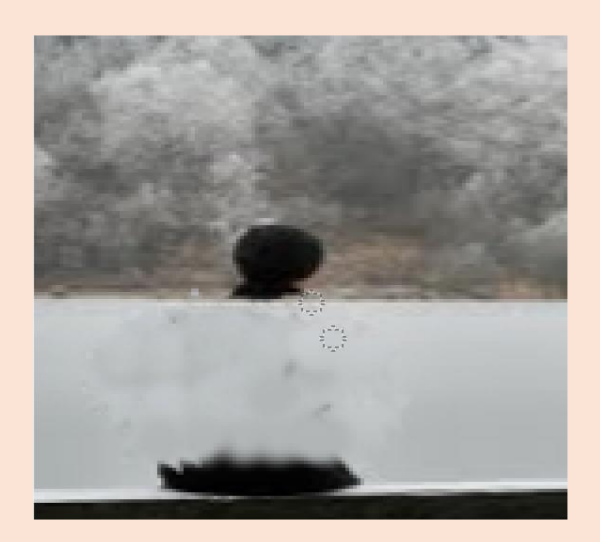
1–Select the **Clone** tool, select the starting copying area then press **CTRL**



2–click by pulling using **the Clone** tool.



3-magnify the image using the **Zoom** tool to best see the details



4-Move the rest of the image by clicking on the space bar + the cursor.



5- Modify the difference in the color scheme by using the **Smudge** tool to mix and blend the current color with the rest of the colors.



6- Final shape of the image.

Activity

By the help of your teacher, Identify the usage of some of the drawing tools of the **Paint tools** such as:

Paintbrush - **Eraser** - **Ink**

Use the **Ink** tool like a *fountain pen* to control drawing distinguished borders and edges with the brush

Use the **Eraser** tool to remove a coloring Space of a picture or a drawing.

Use the **Paintbrush** tool to draw clearly

Remember

Paint tools are used for different drawing purposes, such as free hand drawing, gradient color scheme creating, the current color with the surrounding colors merging, to copy part of the picture in another place in the same picture ...

Paint tools:

The pen in the **Pencil** tool used for free hand drawing

The **Gradient color scheme Blend** tool used to make color gradation using the front or back color

The **Smudge** tool used to mix the current color with the surrounding colors

The **Clone** tool used to copy a part of the picture in another place (in the same image layer).



Questions and exercises

Question One :: **Mark (✓) by the correct answer and a (x) by the wrong one:**

1. Use the **Pencil** tool to make a free hand selection. ( )
2. The **Clone** tool used to mix the current color with the surrounding colors in the space where the tool is moving. ( )
3. One of the selection tools is the **Blend** tool. ( )
4. The **Smudge** tool is used to copy part of the image in another place in the same image layer, it is well known for modifying and reforming images. ( )
5. The **Eraser** tool is used to delete a color space of a picture or an image.( )

Question 2: **Rearrange the following steps of** using the **Clone** tool:

( )stop the cursor at the beginning of the place required to be copied

( )look at the picture to know the part required to be copied.

( )move to the required place to add the copied version.

( )do not stop pressing and pulling till you complete the copying.

( )choose the **Clone** tool.

( )press the "**CTRL**" key on the keyboard (the cursor shape changes to)

( ) click by pulling to create the copied version.

Answer questions through:

MS Word program in the file of "answers of the third lesson" in

(The template of Answers and projects).



A question to prepare for the next lesson:

Sometimes we need to rotate or flip an image

What are the tools that help doing this? How can they be used?



Transforming and Resizing Tools

Objectives

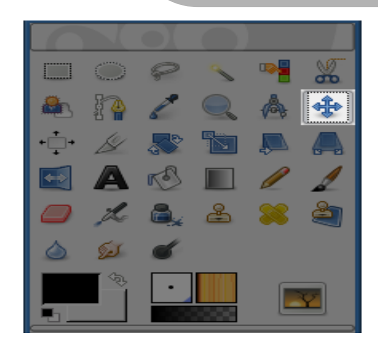
Specific objectives (behavioral) by the end of this lesson the student will be able to:

* move the image.
* cut the image.
* rotate an image.
* add reflection to the image.
* resize the image

Transforming tools

Transform tools are the tools used to change the image format either by transforming, resizing, changing the image dimensions .to access the tools of the **Transform tools** go to the **tools** menu, or through the square tools .There are more than one tool and each one has a function and a method of use.

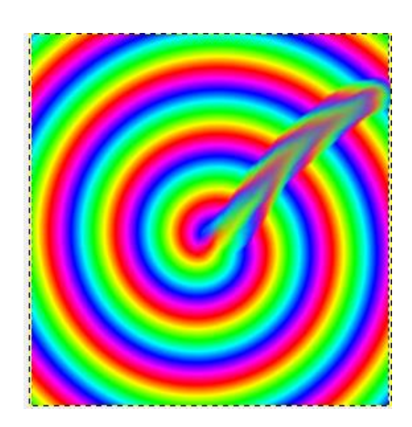
1- Move tool



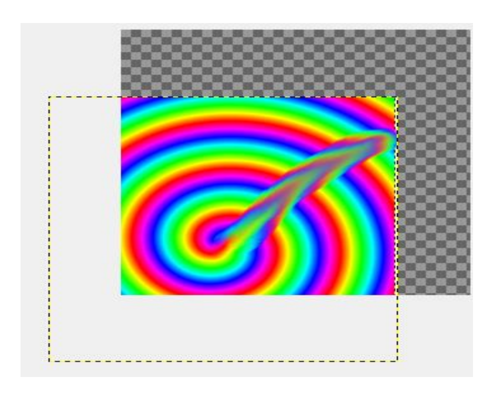
The **Move** tool is used for moving the image or the layers of an image to frame or text.

Activity

By the help of your teacher, identify how to use the **Move** tool, use the image of the previous activity, by clicking and pulling the **Move** tool the image is moved.



The original Image



The Image after using the Move tool

Activity

With the help of your teacher use the Move tool

– Open the image file from the image folder, using one of selection tools, select the image.

– To move the selection, continue pressing ALT + CTRL till you move the selection.





2- Crop Tool

Crop tool is used to cut a part of the image.



Activity

With the help of your teacher, crop an image using **Crop** Tool.

- **Open an image file.**
- **Select Crop**
- **Drag and drop the image to select the needed part.**
- **Press Enter from the key board.**



original Image



select the part needed



image after crop

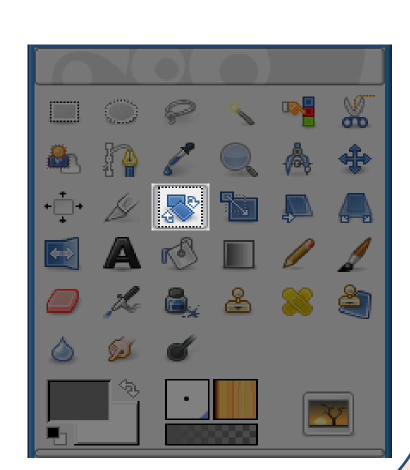
3- Rotate Tool

Rotate tool used to rotate an image

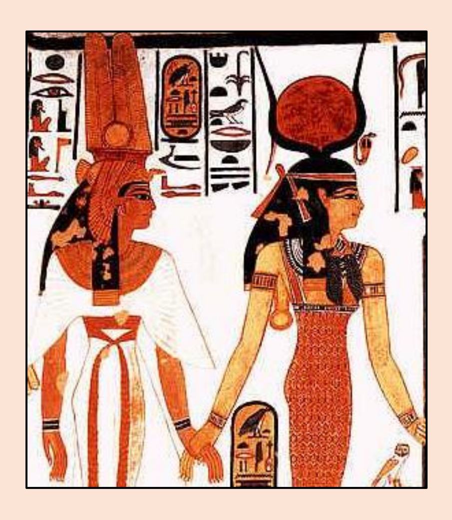
Activity

–With the help of your teacher, rotate an image using **Rotate** Tool

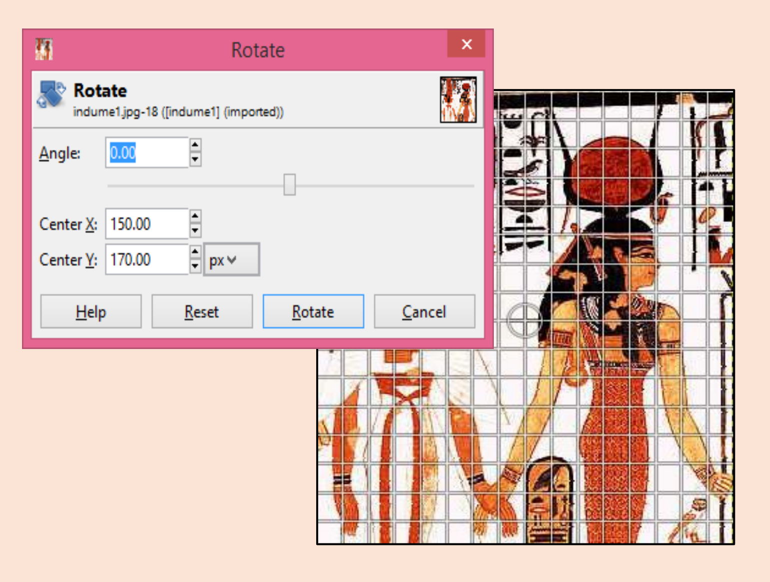
- **Open an image file.**
- **Select Rotate.**
- **Drag and drop to rotate the image.**
- **Press Enter from the keyboard after finishing.**



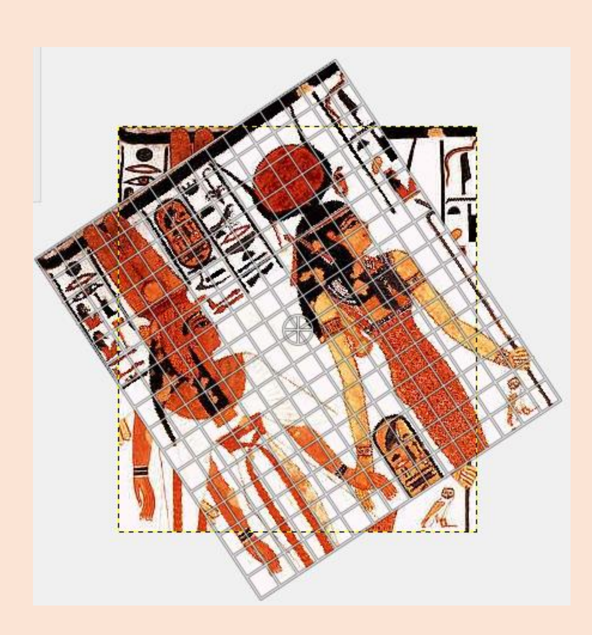
Steps of the activity



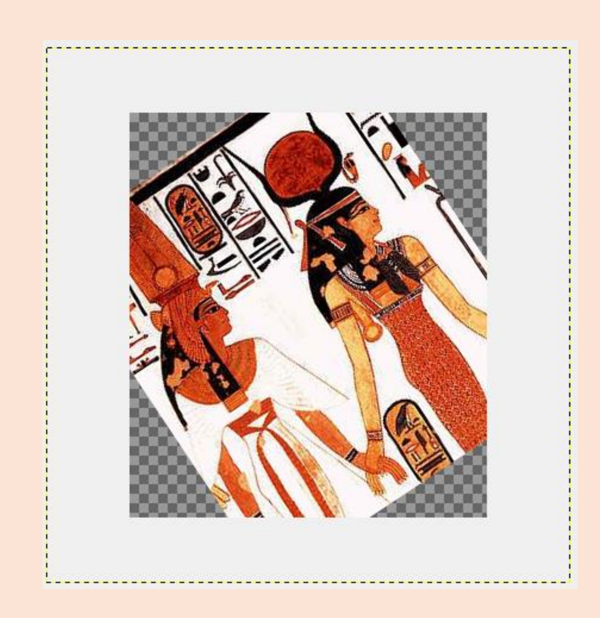
1− The original image



2− Select Rotate to show dialgo box of rotate angle



3- Press and drag to rotate the image



4− Press Enter to finish Rotate.

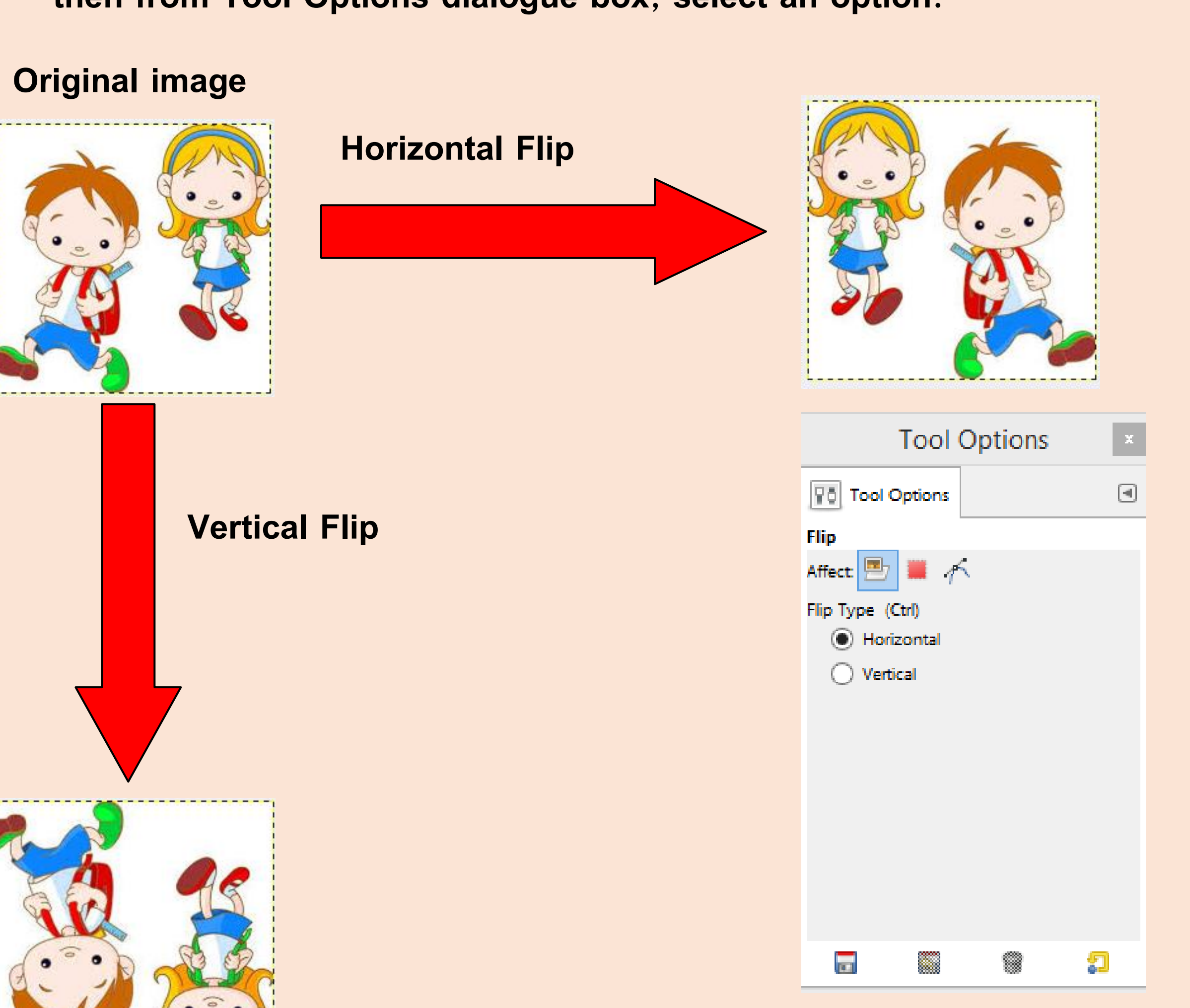
4- Flip Tool

Flip Tool is used to flip horizontally or vertically an image.

Activity

With the help of your teacher, **flip** an image.

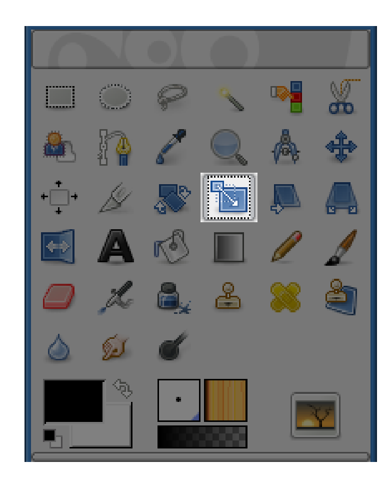
- **Open an image file.**
- **to make horizontal or vertical flip, select Flip tool then from Tool Options dialogue box, select an option.**



Tool Options

5- Scale Tool

Scale Tool is used to change the dimensions of an image [length and width.]



Activity

With the help of your teacher, change the dimensions of an image .

- Open an image file.
- Select Scale Tool.
- Press on an image to show the dialog box to decide the dimensions and image corners.
- Drag and pull to change the dimensions of the image through the dialog box.
- Press Enter from the keyboard when you finish.



Original image



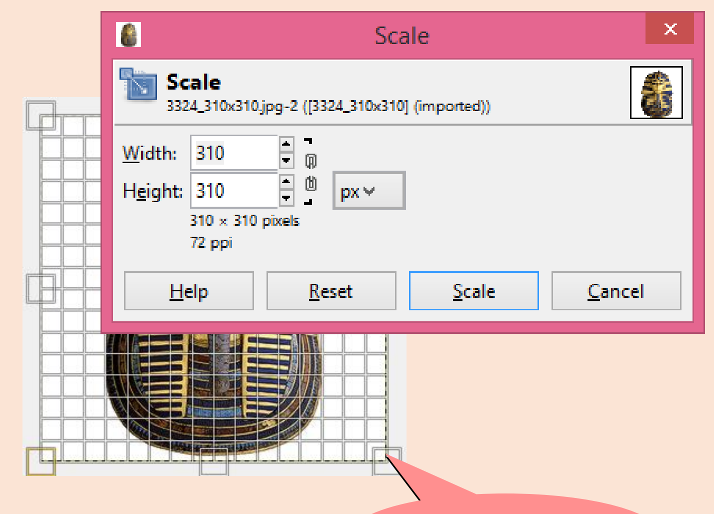
Image after dimensions changed



1−Original image



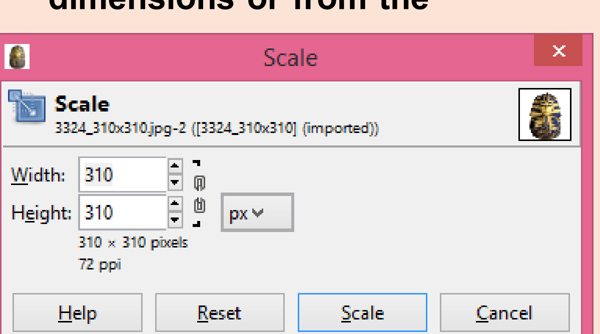
2− Select Scale to see this sign.



3− Presss and drag to one point to change the dimensions or from the



4−Move the dialog box to see the dimensions.



5- Select Scale from the dialog box



6−Image after changing its dimensions.

Note:

You can use **Crop** tool after changing the dimensions.



Image after changing dimnsions

Remember

Transform tools is used to change the shape of an image by moving or resize. The Transform tools can be used from the Tools menu, or from the dialogue box. There are different tools, each of which has a function and usage.

Transform tools:

- Move tool which is used to move an image or image layers or selection or text.

- Open an image file from the Image folder, Use a selection tool to select a part of the mage.

-To move a selection, press ALT + CTRL, continue pressing using the Move tool to move the selection.

–Crop tool is used to crop part of an image.

–Rotate tool is used to rotate an image.

–Flip Tool is used to horizontally or vertically flip an image.

–Scale tool is used to change the dimensions of an image.

Exercises

Question 1-Tick (✓) or (X)

1- Transform Tools are used to change the form of an image through move, resize or change dimensions. ( )

2-Move Tool is used to move an image or image layers or selection or text. ( )

3- To move, press Alt + CTRL and continue pressing using the Move tool. ( )

4- Rotate tool is used to crop an image. ( )

5- Crop tool is used to rotate an image. ( )

6- Scale tool is used to make horizontal or vertical flip of an image. ( )

7- Flip tool is used to make change an image dimensions [length, width]. ( )

Question 2: Put the following steps in the correct order to use Scale tool:

( ) open an image file.

( ) Drag and pull at one corner to change the dimensions or from the dialog box.

( ) Press the tool on the image to show the dialog box to decide the image dimensions.

( ) Press Enter from the keyboard after finishing the dimensions.

( ) Select the Scale Tool.

(Answer is done through MS Word from the answer file in Answer Template and Projects)





Lesson 5

Image layers

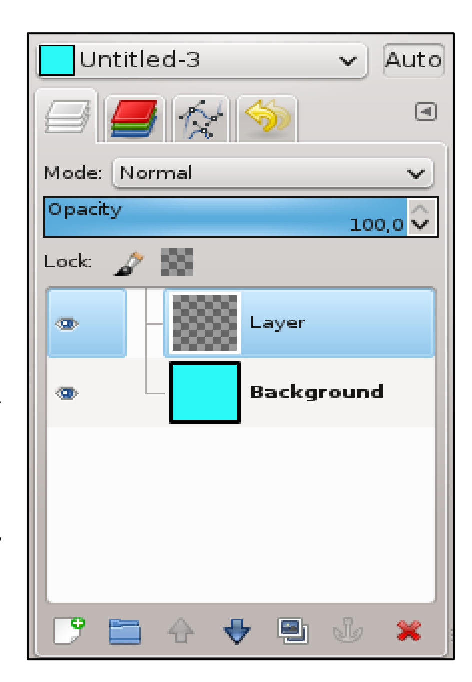
Objectives

Specific objectives (procedural) by the end of this lesson, the student will be able to:

- Recognize the concept of image layers.
- Be proficient in the use of the image layers to create an image.
- Modify an image using image layers.
- Insert text over the image.
- Export image file with an appropriate extension.

Image Layers

There is Layers tab within tabs box (layers, channels, paths, undo), and uses the "Layers" tab to edit, add and control different picture layers, and can think of the image layers as slices are placed on top of each, layers used to assist in the development of components and details different picture so that every part or detail of the image in the layer mode, to be addressing this part of the picture (scanning – rotation – identification ...) without affecting the rest of the image parts, representing the bottom layer (lower layer) background image "background" and come above the rest of the layers to contain the rest of the image details.

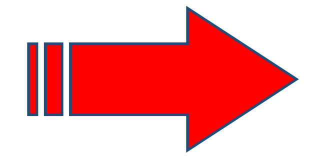


" The Layers, Channels, Paths, Undo History dock "

Image consisting of several layers is represented as follows:



The Image layers





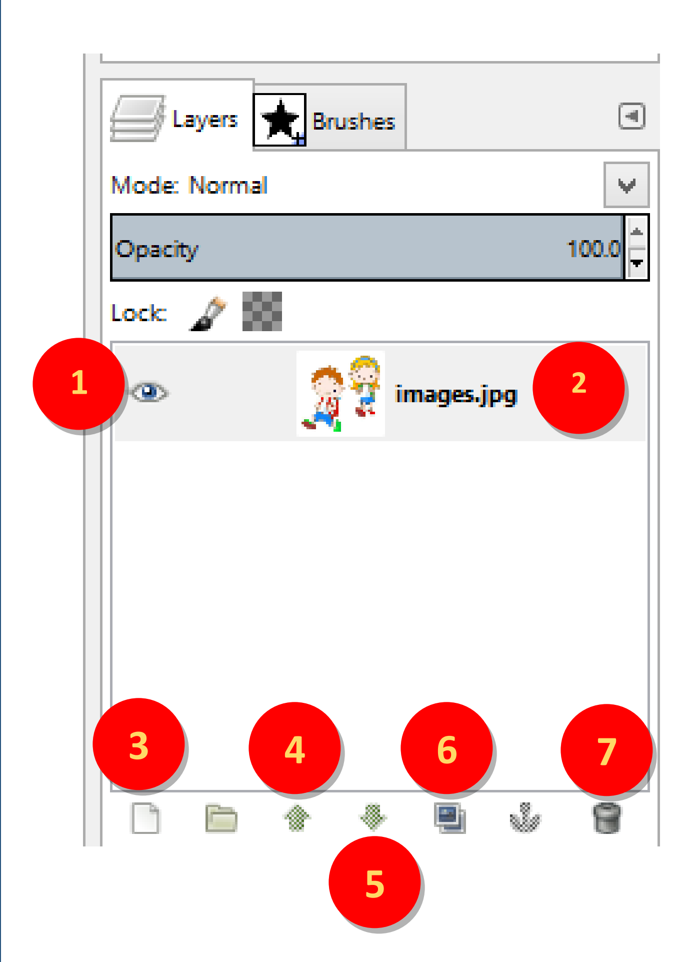
The image in its final

Dealing with the Layers

You can get to the "Layers" tab through:

–The main interface of the program. Or

–Through Windows menu → Dockable Dialogs → Layers



Tab" Layers"



The image in the images window

1– Layer visibility – to make the layer visible or nonvisible.

2– Layer thumbnail –is a mini format of the layer and the layer name appears next to it (and can be changed by clicking on it).

3– New layer –to add a new layer

4- Raise layer -to move the layer to the highest level.

5- Lower layer- to move the layer to a lower level.

6- Duplicate layer - to copy the current layer.

7- Delete layer -to delete the current layer.

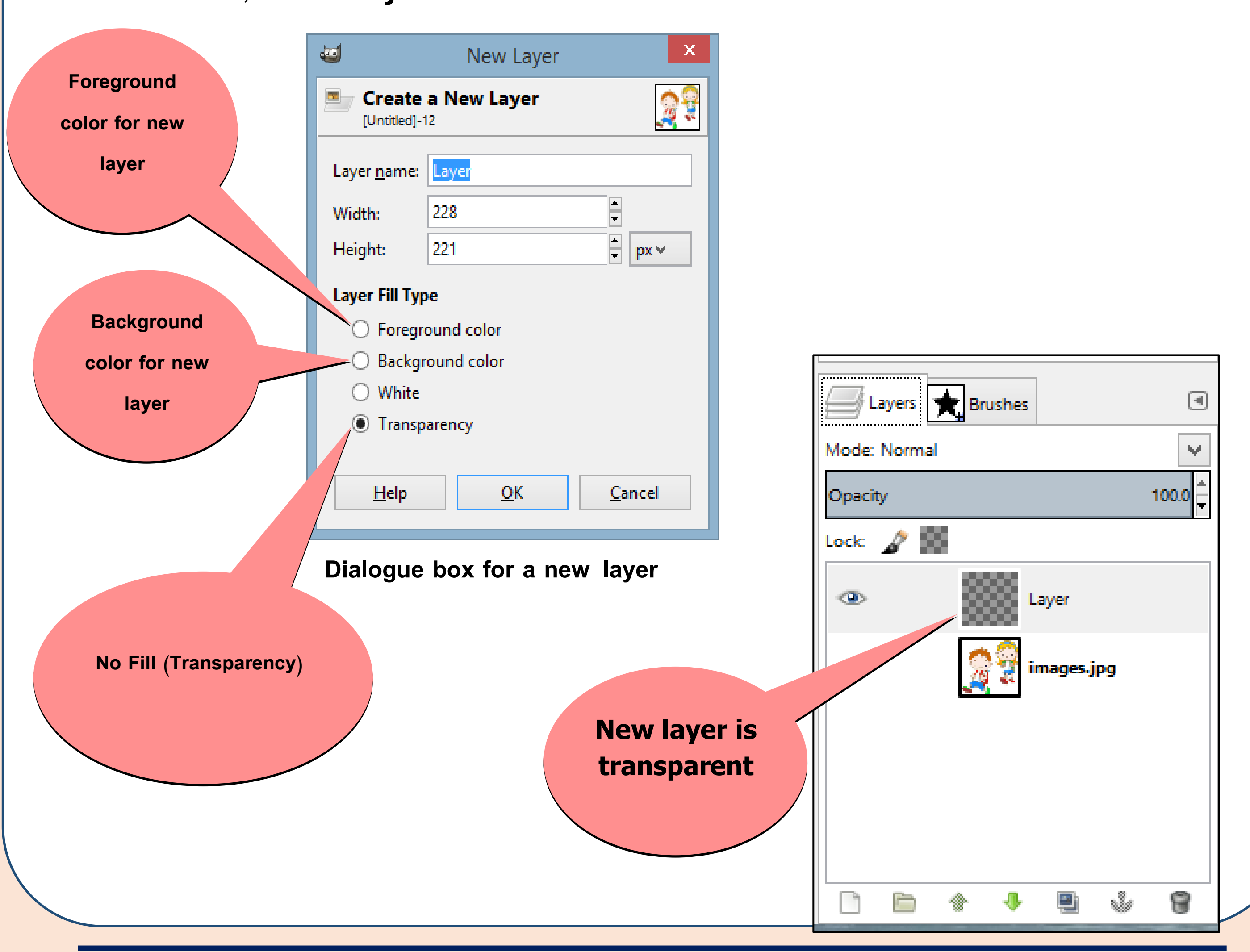
Activity

With the help of your teacher, add a new layer:

-To add a new layer, click on the New layer in the "Layers" tab.

-To show the dialog "New Layer."

-Press OK, a new layer is added



Dialogue box for a new layer

Note:

to deal with the layer, it must be pressed to become the current active Layer.

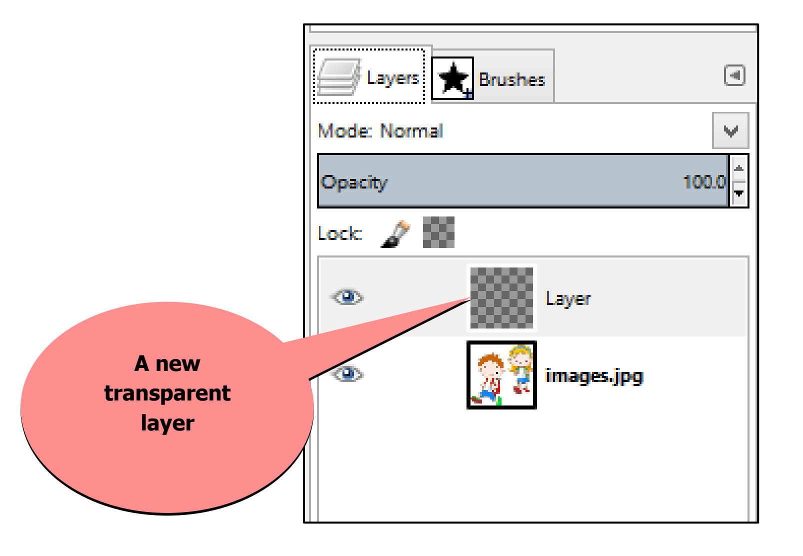
Activity

With the help of a teacher, Choose one layer, Mark the layer invisible:

-In the previous training, a layer is to chosen and pressed to become the current active layer.

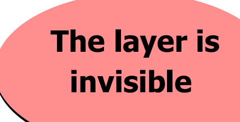


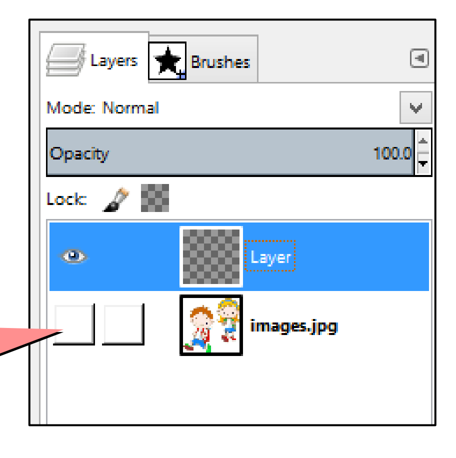
The image in the images window



- To make the image layer invisible, click on the Layer visibility icon, and then the layer disappears.







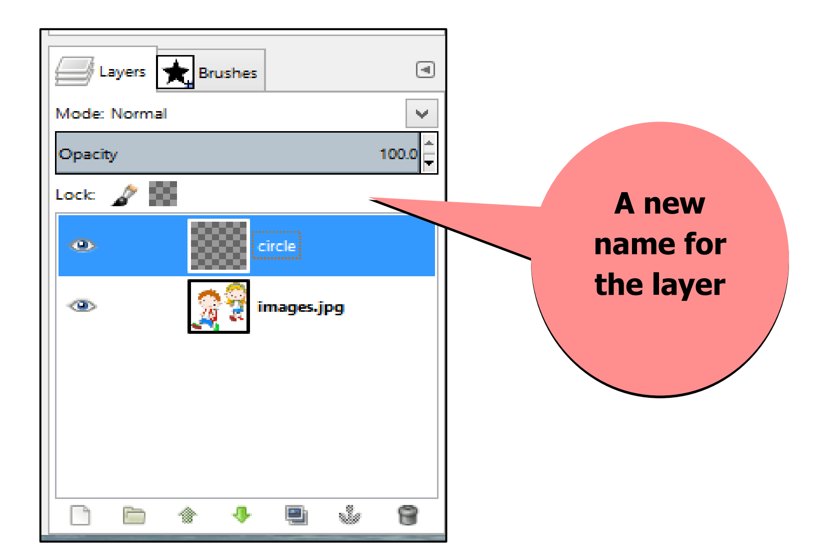
Images window (the layer that has the image disappears).

To reshow the layer content, click the layer visibility icon again.



With the help of your teacher, rename the layer:

To rename the layer, double click on the layer and give it a new name.



Important Notes:

- To deal with the layer, you must make sure it is the current active layer by clicking on it.

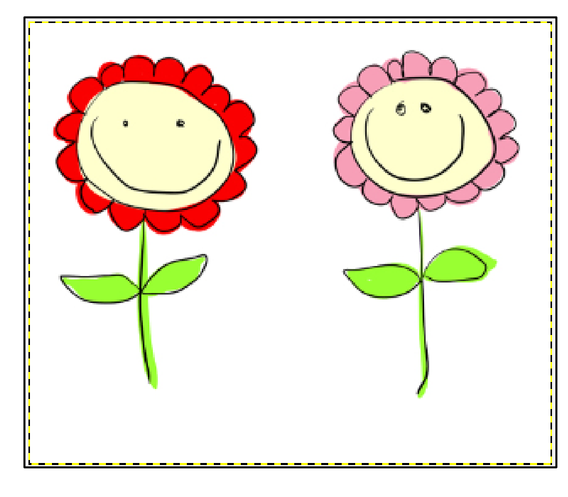
- For ease of working with one of the layers, you can hide the rest of the layers by clicking on the layer visibility icon and dealing with the required layer icon.

- You can reorder layers using the arrows up and down in the Layers tab.

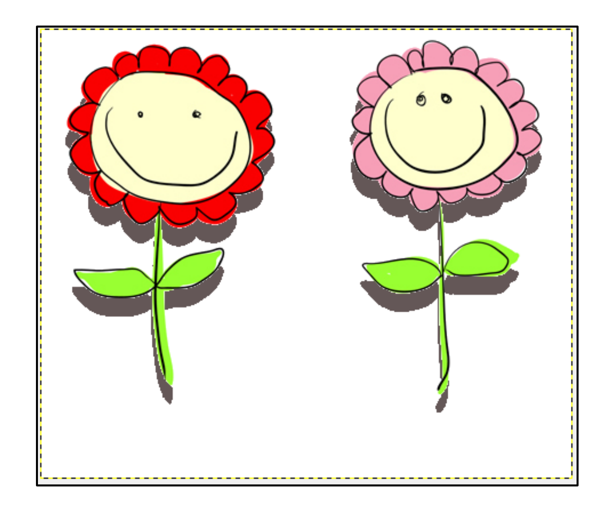
Activity

With the help of your teacher, try to make a shadow for the following picture:

Open the image file from the "Photos" folder; try to make a shadow for the image.



Original image



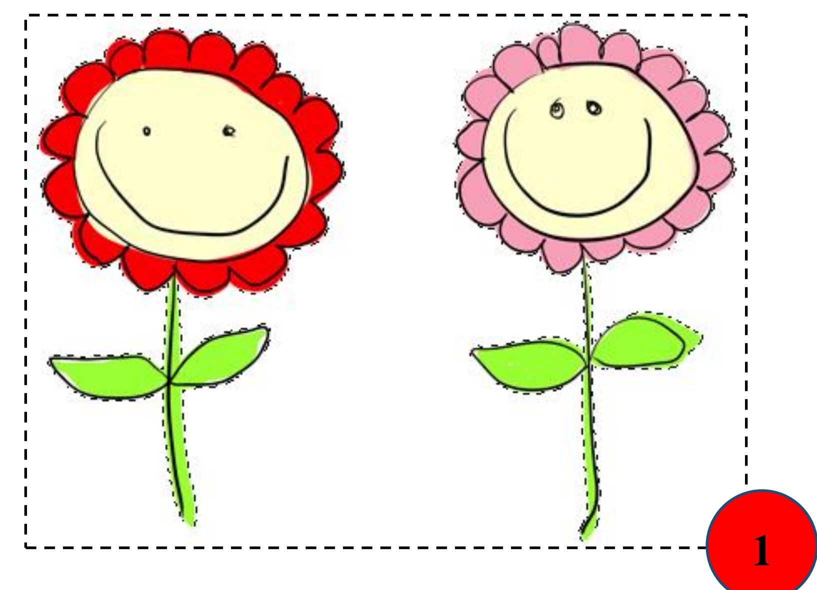
The image with a shadow

Steps to implement the activity:

1. Select the white color in the original image using Fuzzy tool; the white space around the flowers is selected.

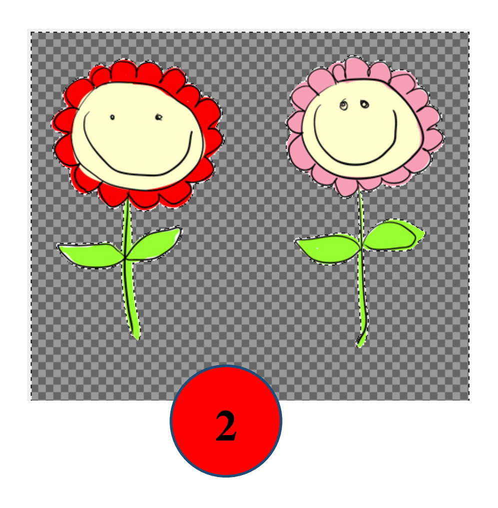
Important note:

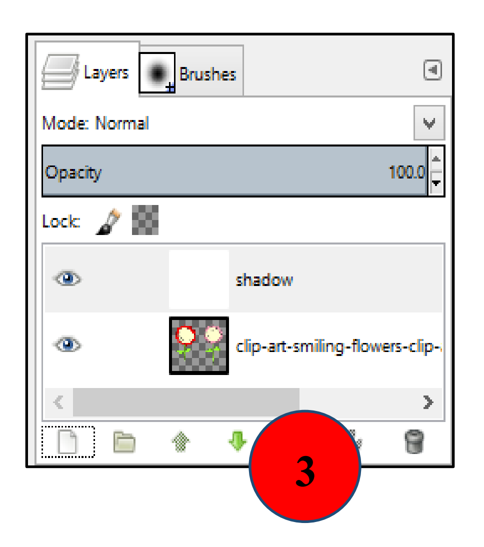
- There are some images which may not allow Cut or Delete a part from it.
- To make the image liable to delete part of, do the following:
- You must make sure that there is no selection in the image (Select-None).
- Choose from the list of Layers Transparency and then choose Add Alpha Channel.
- The Alpha Channel represents the transparency of the image.



2- Press "Delete" key from the keyboard, then selected white space around the flowers is cleared.

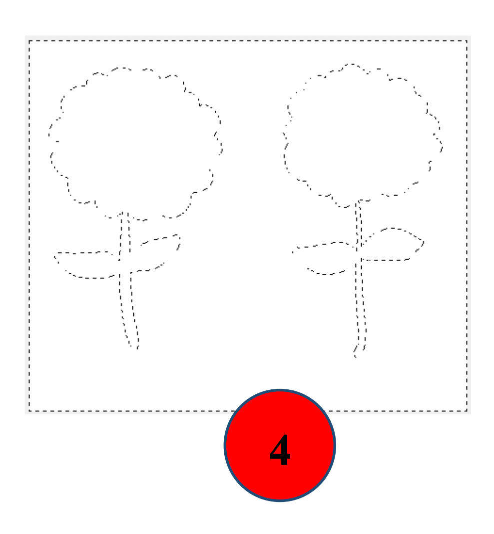
3- Insert a new layer with name "Shadow."

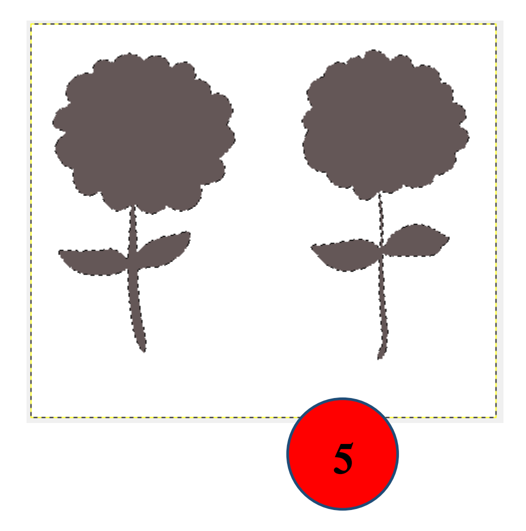




4- from the list Select, Choose Invert to invert the selection and determine the shape of flowers.

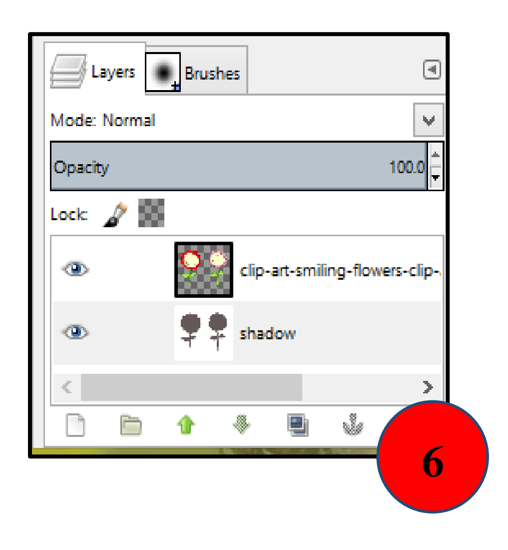
5- Make sure that the new layer "Shadow" is the current layer. To change the foreground color in gray - Use the Bucket Fill tool to make color packing in gray inside flowers selection

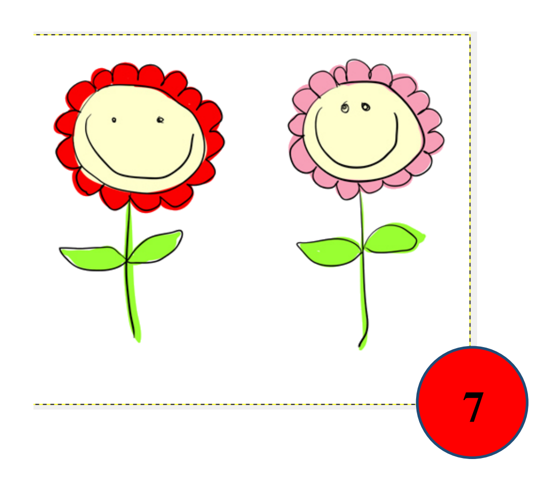




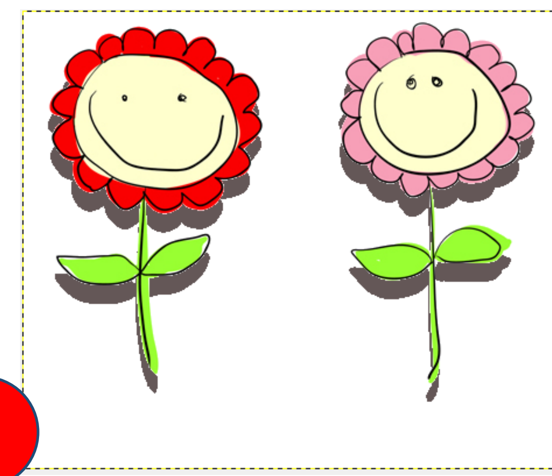
6- Rearrange the layers so that the layer "Shadow" is the bottom layer

7-to end the selection, from the Select menu, choose none.



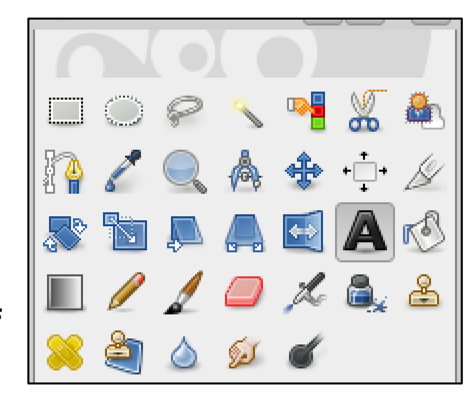


8- Move the upper layer of the flowers using the Move tool to show the shadow.



The final image with shadow

Text tool



Your text is inserted through the Text tool, and it should be noted that when using the text tool is automatically inserted a new layer for the text, and the text box be shown in which text will be written, new layer name will be words from the beginning of the written text.

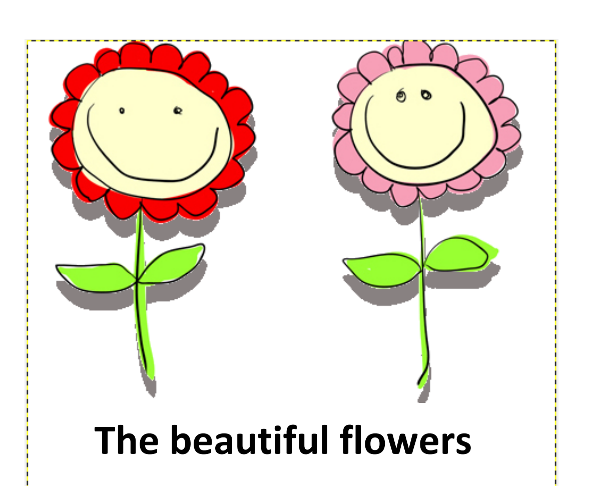
We are dealing with text written specifically to change the font color and font type of text tool options.

To move the text layer text is selected to become the current layer, using the Move tool and stand on the text and press and drag him are moving it.

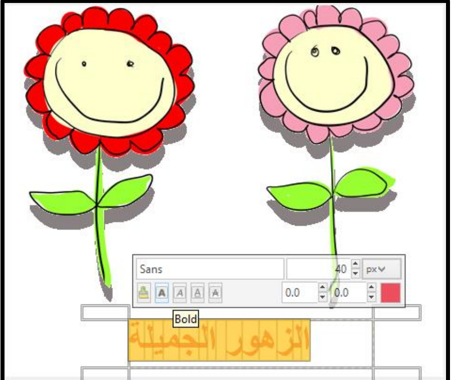
Adjustable in the text must select the text layer to become the current layer, and then select the text inside the text box and the amendment to it.

Activity

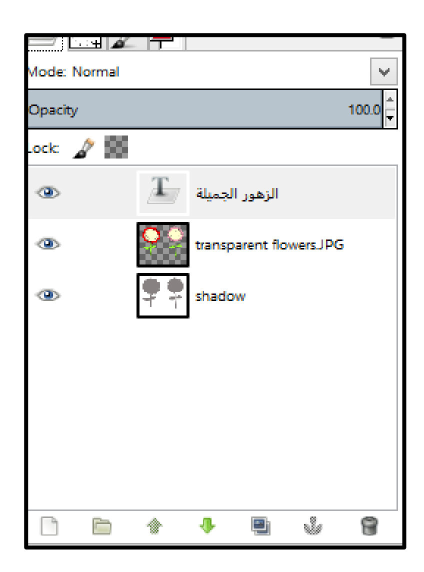
With the help of your teacher,
type the text "the beautiful flowers" in the form of flowers in the former activity and export .the image file with appropriate extension



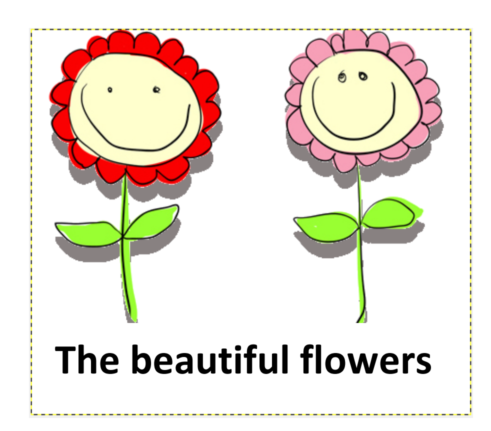
Steps to implement the activity



When choosing the text tool, the text box appears in which the text can be written and edited.

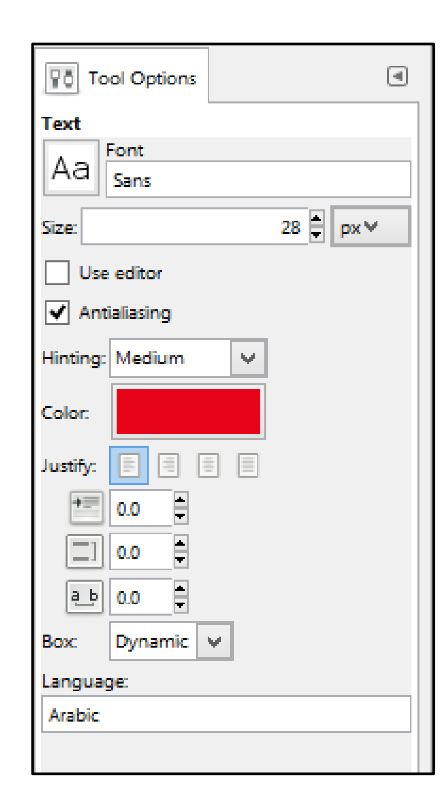


A new layer is automatically inserted



To get Out of the write mode,

press on any other layer



Text tool options

You can get more information about the text tool from the link:

http://docs.gimp.org/2.8/en/gimp-tool-text.html

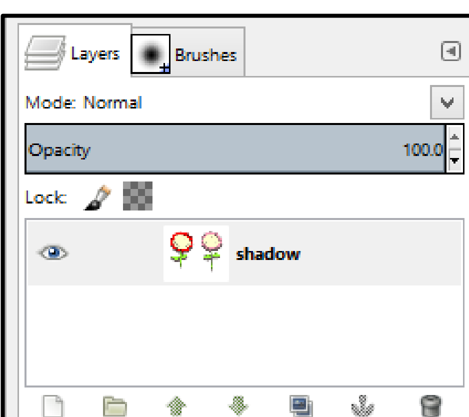
Export image to a file with an appropriate extension

To export the image as a file with a suitable extension (JPG, ... GIF), follow these steps:

-Ensure that all layers are Visible.

–integrate all layers, and to merge the layers into a single layer choose Flatten Image of the Image menu.

–From the File menu choose Export, select the appropriate extension of the file and its name.



Remember

–

–To make the layer invisible, press on the icon.

–To add a new layer, press on the icon .

–To move the level of layer to the top, press on the icon.

–To move the layer to a lower level, press the icon .

–To copy the current layer, press on the icon.

–To delete the current layer, press on the icon.

–To deal with the layer, press on it so that the current layer becomes "Active Layer."

–To rename a layer, Double Click on the layer and type its name.

– When you insert the text, a new layer is inserted and the layer is named automatically with words from the beginning of the written text.

To export the image as a file with appropriate extension:

–Ensure that all layers are Visible.

–merging all layers, to become one layer, choose Flatten Image from the Image menu

–From the File menu choose Export, select the appropriate extension of the file and type the file name.



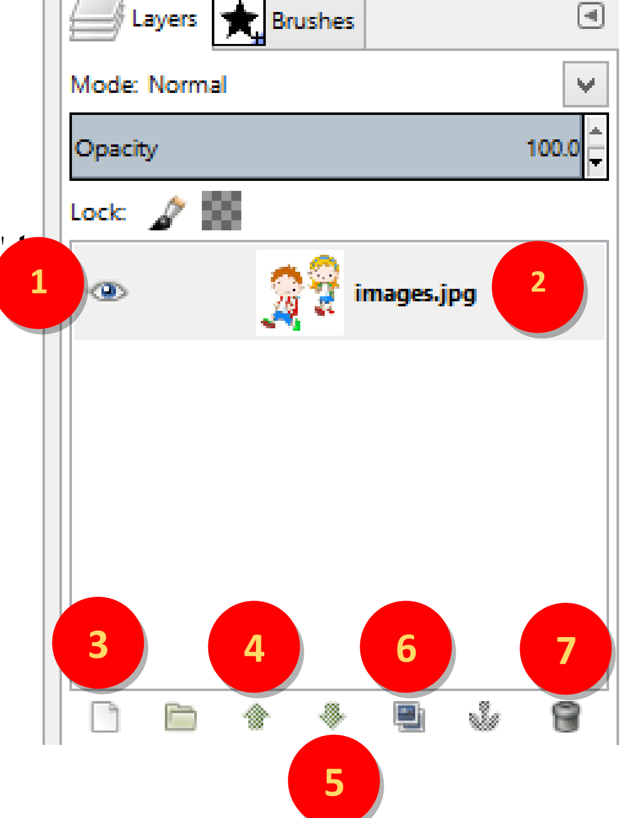
Exercises

The first question:

Complete the following phrases:

The following picture shows the "Layers"

Explain what each number refers to:



1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....

Second question: Order steps to export file with appropriate extension:

( ) **From the File menu choose Export, select the appropriate extension of the file and the file name.**

( ) **to merge all layers into a single layer, choose Flatten Image from the Image menu.**

( ) **ensure that all layers are Visible.**



Prepare this Question for the next lesson:

Filters are used for the modification and change the appearance of the image.

What is the Filters? And how it can be used?



Lesson Six

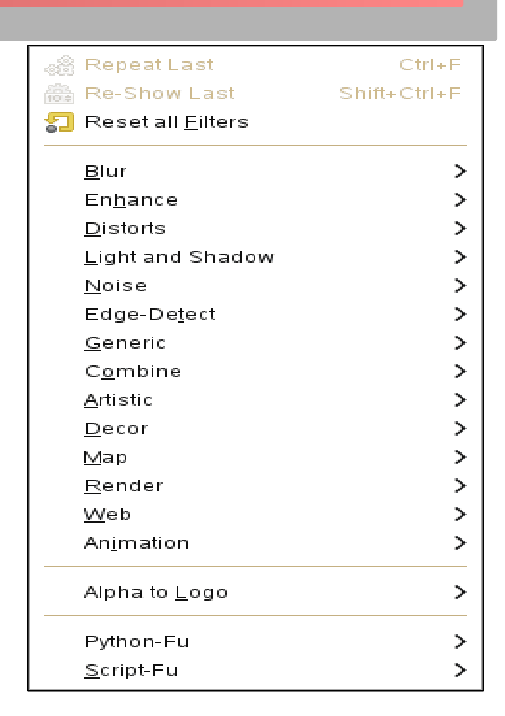
Edit an image using Filters

Objectives

By the end of this lesson, the students will be able to:

- **identify the concept of Filters.**
- **identify how to use Filters.**
- **change the appearance of an image using Filters.**

Change the appearance of an image using Filters



A Filter is used to help change the apearance of an image.

To use a filter , select the suitable filter from the Filters *menu*.

1- Blur

This filter is used to wipe out or darkening the image.

Get it from Filters *menu* → Blur → Blur



Original Image



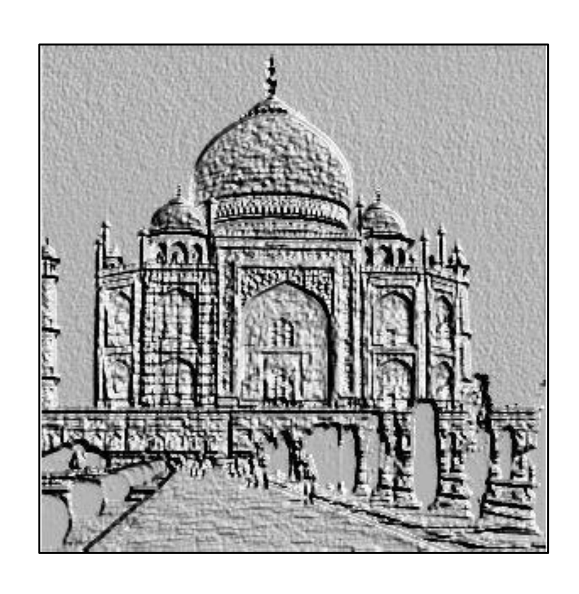
Image after using Blur filter

2- Emboss

Emboss is used as following:

Filters *menu* → Distorts → Emboss.

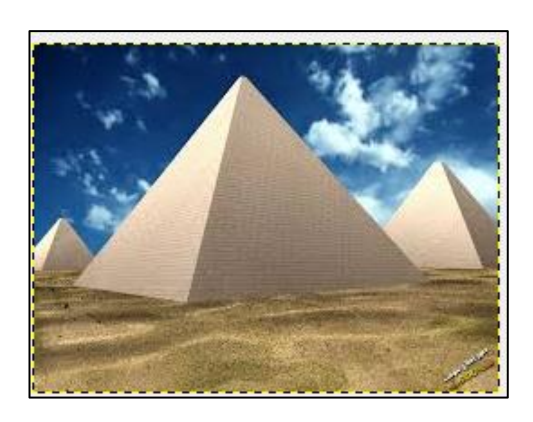


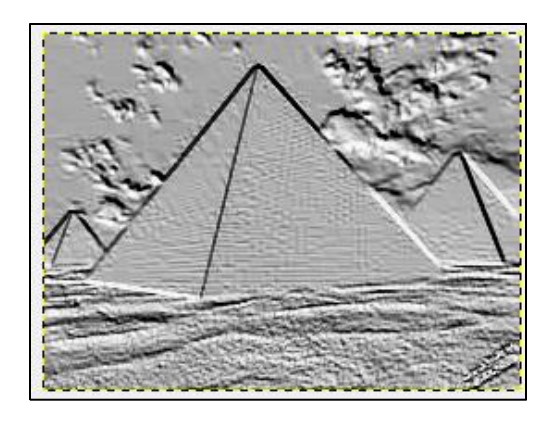


Original image **image after using Emboss**

Activity

With the help of your teacher, open this image from image folder, apply Emboss





Original image **after applying Emboss**

3- Page Curl

It can be used as following: Filters → Distorts → Page Curl.



Original image

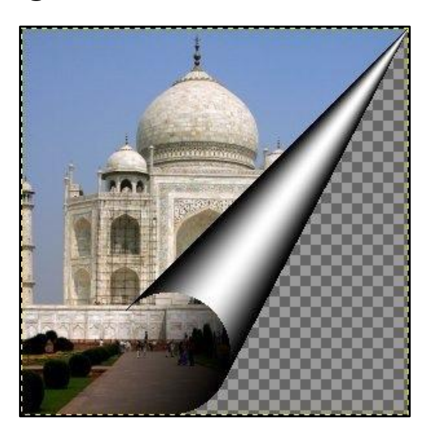
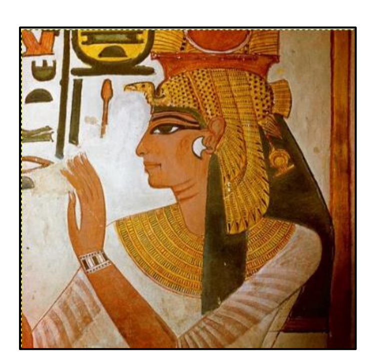


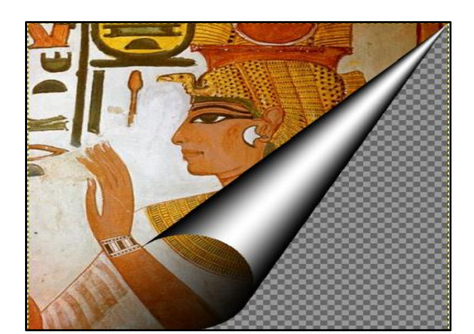
image after using Page Curl

Activity

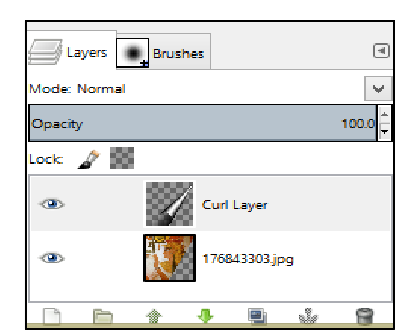
With the help of your teacher, open this image file from image folder and apply Page Curl *filter*



original image



after using page curl



a curl layer is added

Notice: When we apply Page Curl, a new layer is added "Curl layer".

Discuss this with your teacher

4- Supernova

Supernova is used as following: Filters *menu* → Light and Shadow → Supernova.

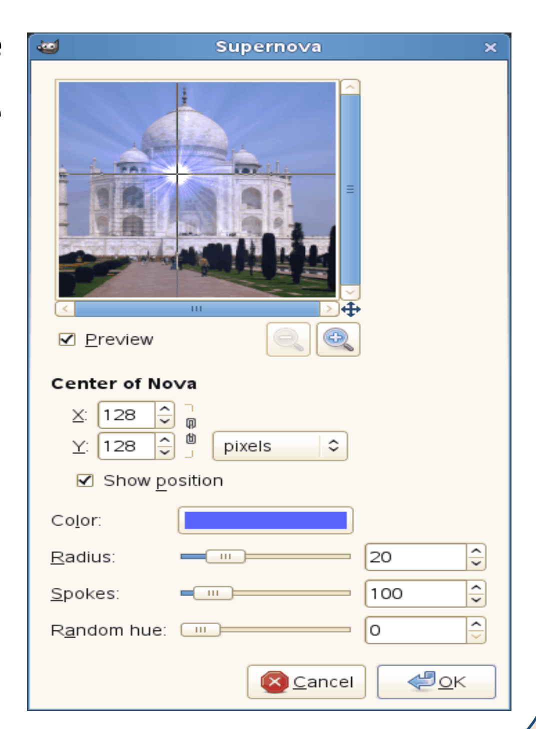


Original image



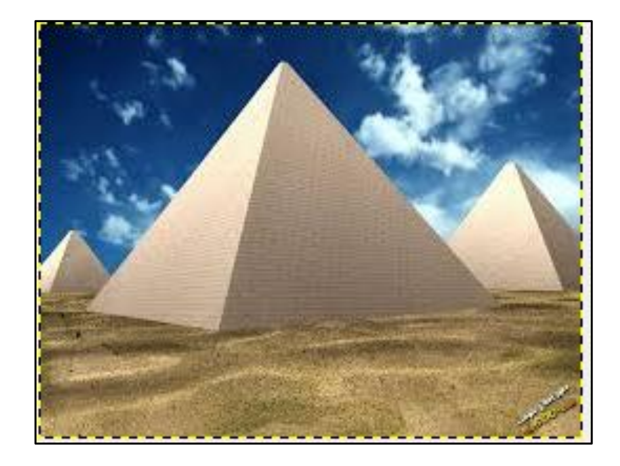
after using Supernova filter

To reach the appearance as in the image here after using the filter, you must modify the properties as in the picture on the right.



Activity

With the help of the teacher, open the image from the pictures folder, use Supernova.



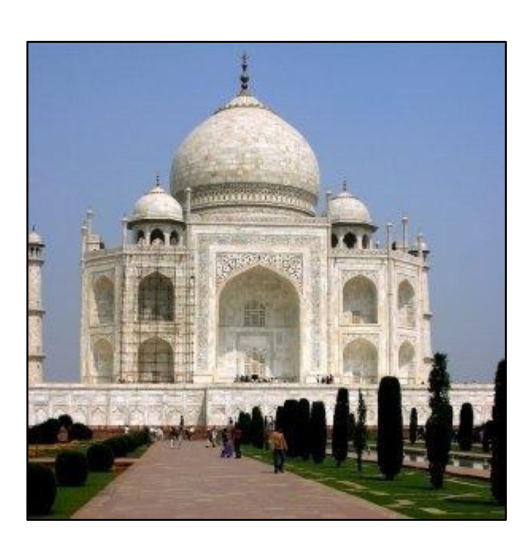
Original image



image after using Supernova

5- Film

Use Film *filter* as following: Filters *menu* → Combine → Film.



Original image



image after using Film

To reach the appearance as follows, you have to modify the properties of the effect as in the dialog box.

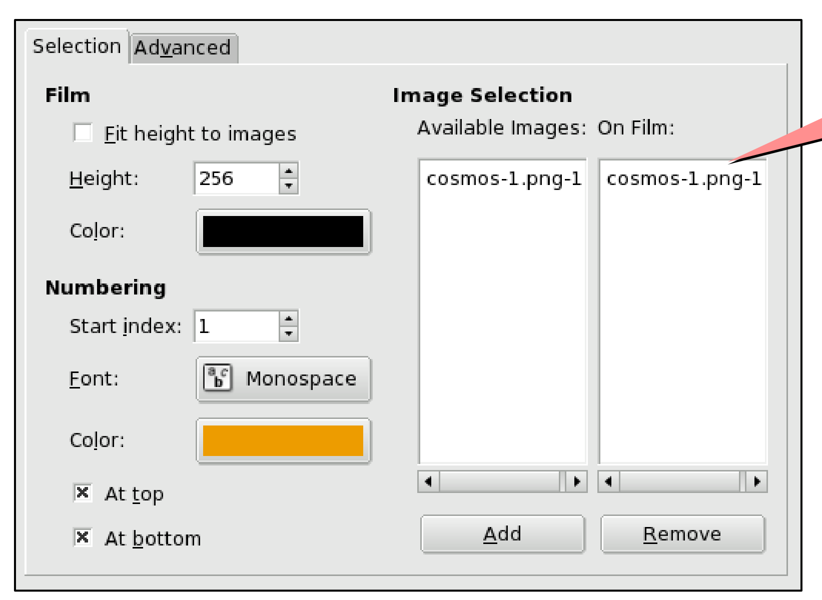


Image file name

6- Weave

Use the filter Weave as follows: Filters *menu* → Artistic → Weave



Original image

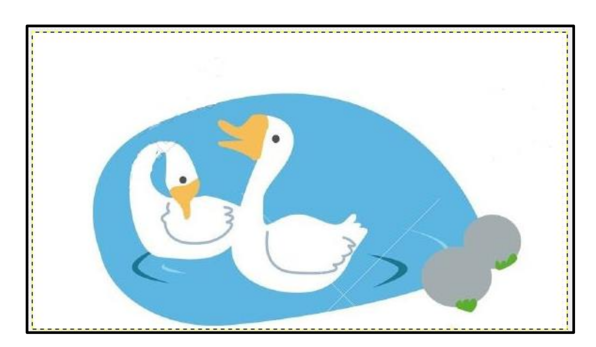


Image after Weave

Activity

With the help of your teacher,

open the image from the images folder and use Weave *filter*



Original image

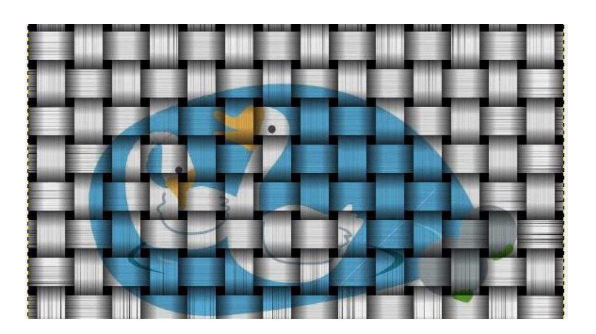
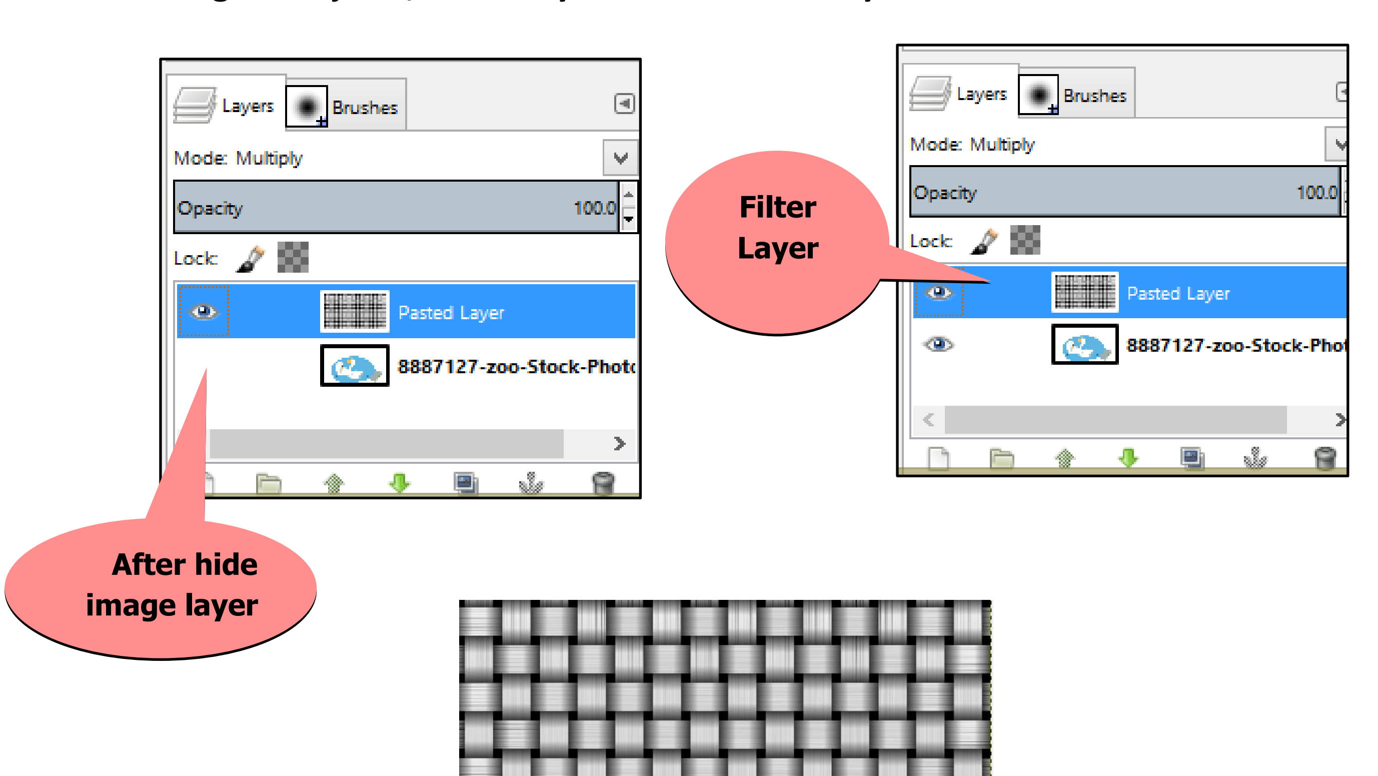


Image after using Weave

Notice:

When using Wave *filter*, a new layer called Pasted Layer is added.



Filter layer after hide the image layer.

7- Old Photo

This filter is used as follows: Filters *menu* → Decor → Old Photo

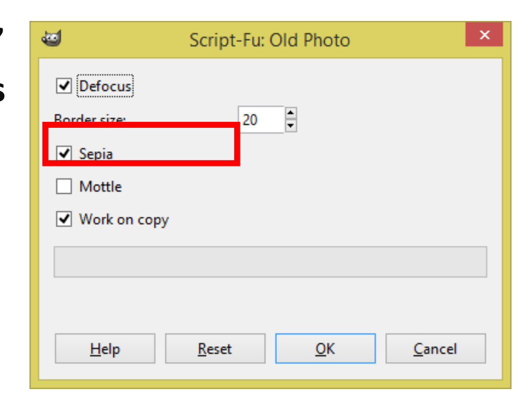


original image



image after using the filter

Notice: **in the dialog box of the filter properties, when selecting "Work on copy" option, the filter is applied to a copy of the image file.**



Activity

With the help of your teacher, open the image from the iamge folder and apply " Old Photo" filter.



Original image



image after using the filter

8-Map Object

This filter is used as follows: Filters *menu* → Map → Map Object.

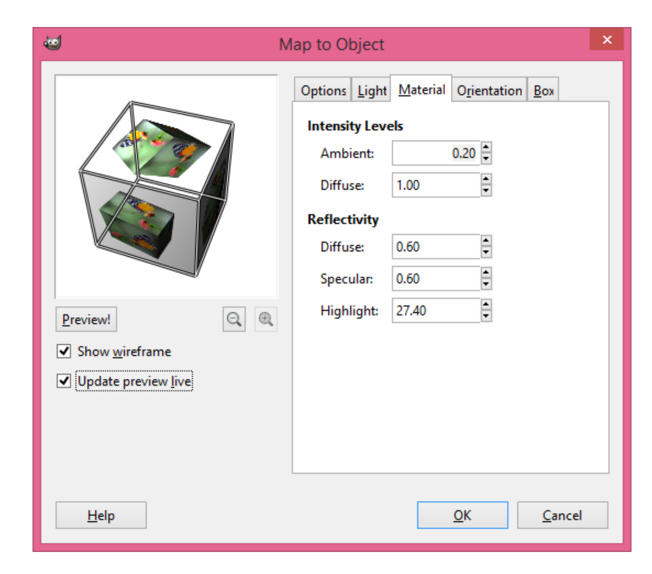


Original image



Image after using the Map object filter

- **To reach the image appearance as in the picture, modify the filter properties as in the dialog box.**



Activity

With the help of your teacher, open the image from the images folder and use **Map Object** *filter*



Original Image

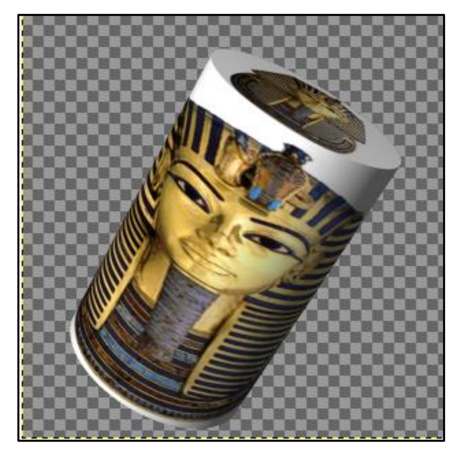


image after suing the “Map Object “

Remember

The filter is used to help change the appearance of the image.

When applying the filter, a new layer is added to the image or a new file is ceated.

To use a filter, open the Filters menu and select the apropriate filter.

Questions



Question 1: Put (✓) in front of the right sentences and (X) in front of the wrong one:

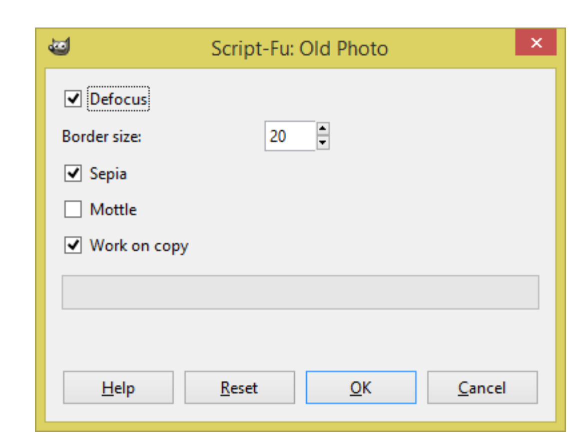
1. A filter is used to help change the appearance of an image. (   )
2. To use filter, from the "Filters" menu, select the suitable filter. (   )
3. When we use 'Filters", a new layer is added or a new file is created. (   )

Question 2 : Complete the following:

In the dialog box of the "Old photo" properties, when select "Work on Copy ", this means

....

....



Answer is to be done through MS Word in the Lesson Six Answer file



Prepare for the next lesson

Using the tools in image creating and editing program

How can you design and create a portrait?



Lesson Seven

Image types

Objectives

Specific objectives (procedural) by the end of this lesson, the student will be able to:

- **differentiate between bitmap Images Raster and Vector Images**
- **recognize the color mode of the image (Image Mode).**
- **modify one of the images Image Mode.**
- **export the image file with an appropriate extension.**

Image types

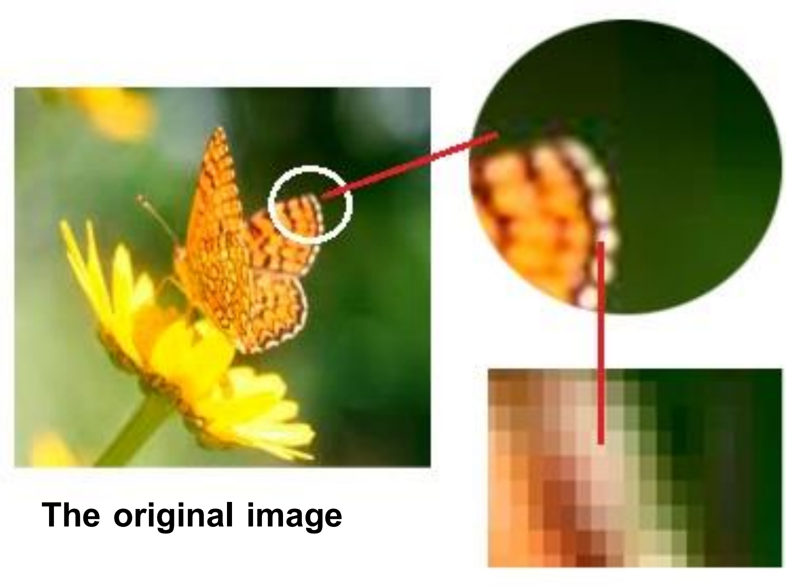
Image types:

1- Raster Images.

2- Vector Images

Raster Images:

It consists of contiguous points (Pixels), and each image contains rows and columns of the Pixels and the higher the number of the Pixels, the greater image clarity is, It has a large storage area for the image, and the quality and clarity of the picture change when zooming in or out.



The original image

Part of the picture when enlarged

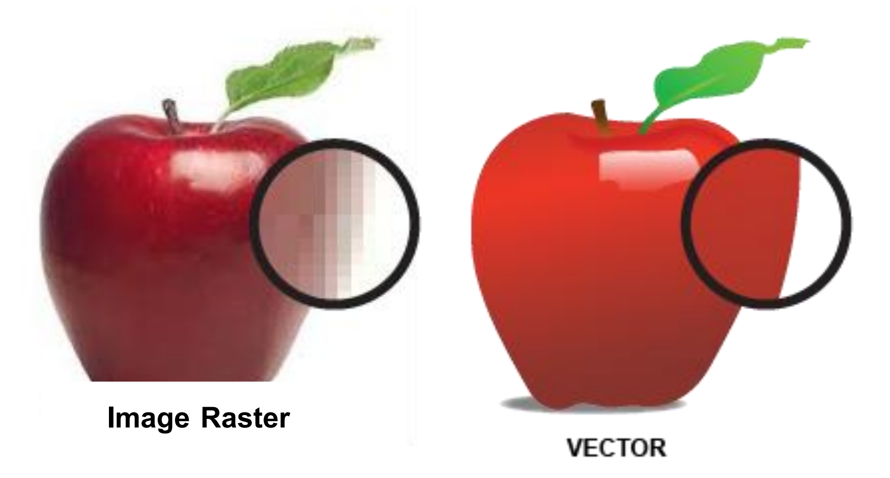
Of contiguous points (Pixels)

Image Raster

Vector Images:

It is characterized by no change in image quality and clarity when enlarged or minimized, and it has a small storage area.





Activity

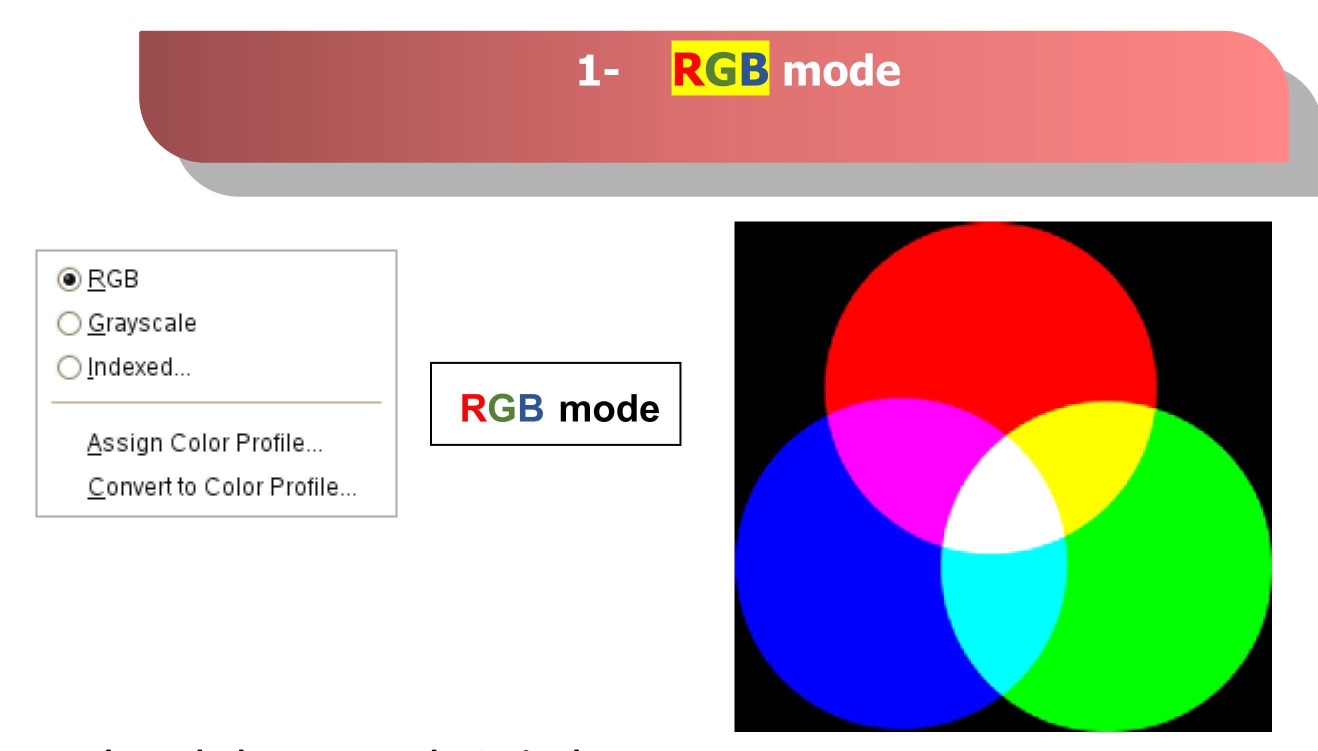
With the help of your teacher, look for the types of images and the difference between Raster and Vector Image.

Image Mode

There are three modes of color of the image, and you can change the status or condition of the color image through the Mode command in the Image menu, namely:

1. RGB mode.
2. Grayscale mode.
3. Indexed mode.

1- RGB mode



Through the command RGB in the Image menu, the colored image is converted to RGB mode, RGB color mode fits very much in the case of displaying images and graphics through the computer screen.

RGB mode consists of the primary colors (red, green and Blue), and these three colors are mixed and united with different degrees of mitigation, lighting and intensity to give each primary color of these colors 256 color degree.

2- Grayscale mode

Grayscale mode

The image can be converted to the color gray case by using the command Grayscale from Image list, where Grayscale mode reaches up to 256 degrees of gray ranging from black to white.

An Important note:

- The image can be converted from RGB mode to Grayscale by selecting the command Gray scale from Image menu.
- But it should be noted that the image will lose its Colorimetric data of RGB mode so that the RGB mode for the image cannot be restored again.

3- Chromatography Situation of the image Indexed mode

Indexed mode:

You can convert the image to Indexed mode by using a command Indexed from Image list.

Activity

With the help of your teacher search for: RGB mode - Grayscale mode - Indexed mode.

-More information can be found on the link:

http://docs.gimp.org/2.8/en/gimp-image-mode.html

Activity

With the help of your teacher, try to do the following:

1- Open an image file in the program.

2- Change the color mode of the image.

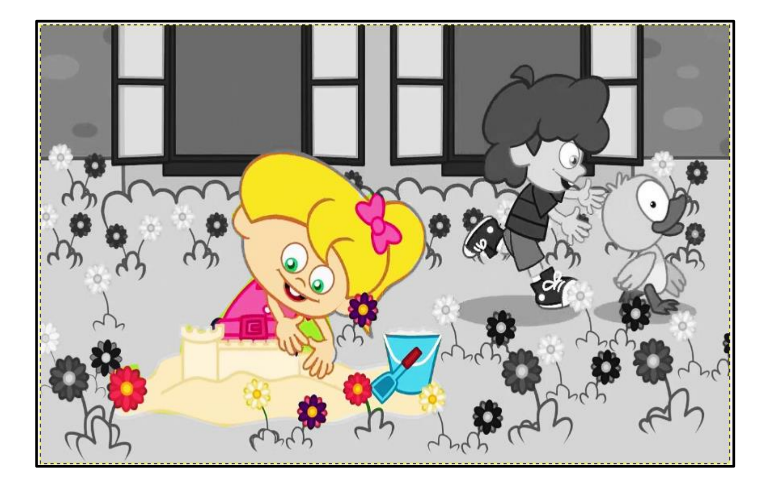
3- Copy the image from its original file.

4- Paste the image into a new layer in the other file.

5- Edit the image layers so that the original image become as follows:



The original image



The image after its modification

Steps to implement the activity

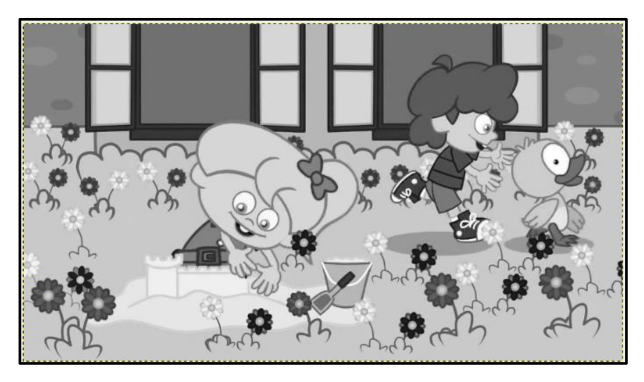


RGB mode

With the help of your teacher, try to do the following:

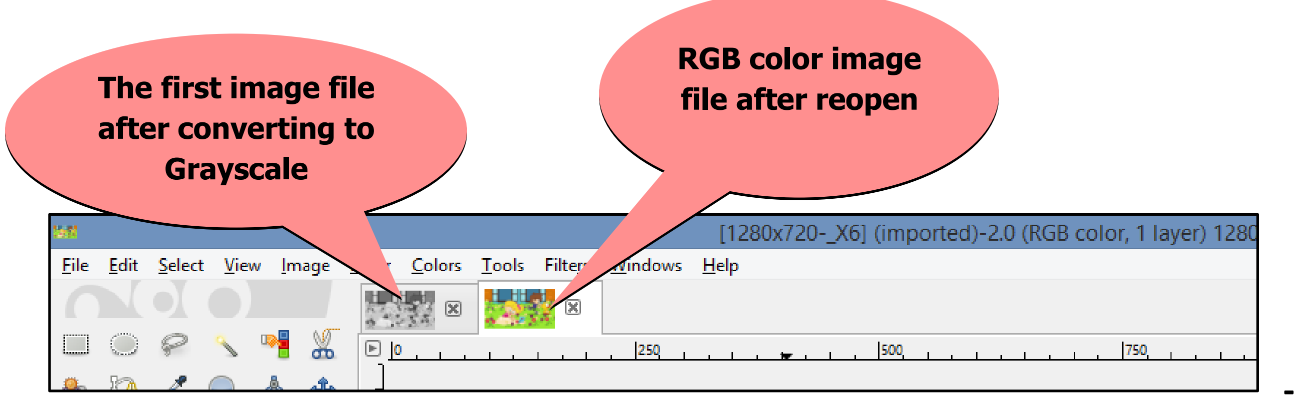
- Open the image file from the "Images" folder.

- Change the color mode of the image from RGB to Grayscale by selecting Grayscale *mode* from the Image menu.

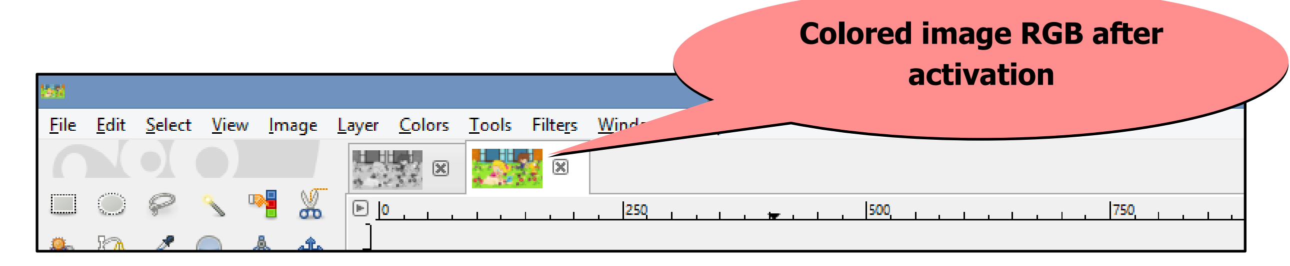


Grayscale mode

Reopen the original image file RGB again so that two files appear on the top of the window as shown in the figure.



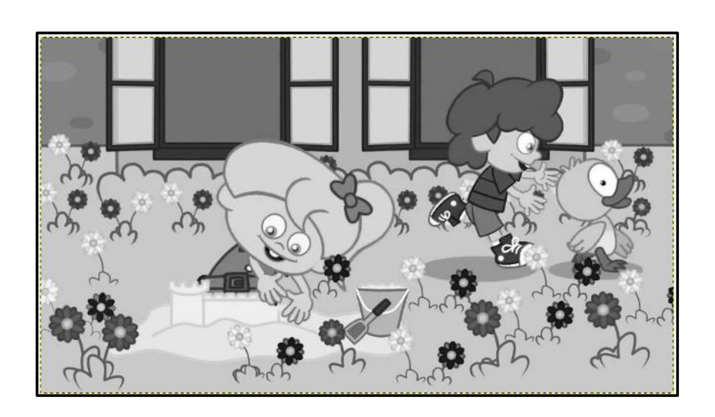
- Copy the gray Grayscale image file by selecting all from the Select menu.
- Go to RGB color image file by click its tab on the top of the image window.

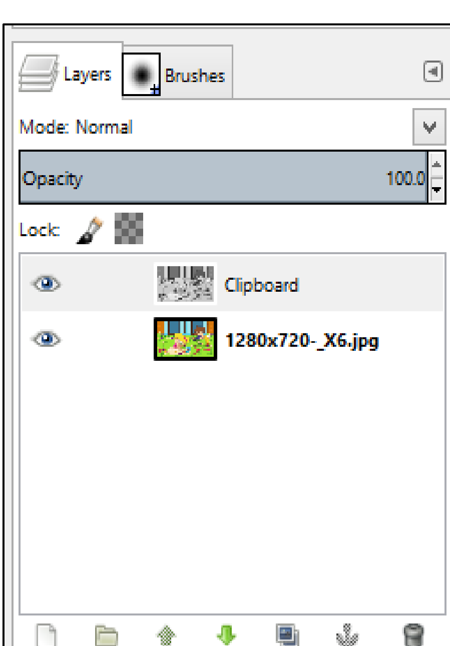


- Paste the image Grayscale in the colored image file RGB through:

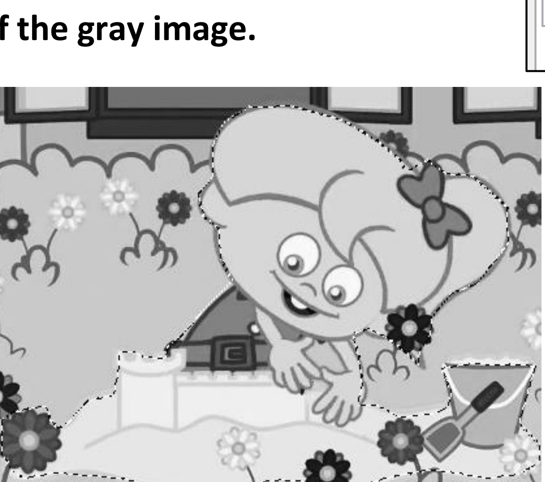
Edit menu ⟶ Paste as ⟶ New Layer

- Grayscale image appears after the paste in a new layer on top layer RGB color image.





-Use one of the selection tools such as Fuzzy Tool to determine part of the gray image.

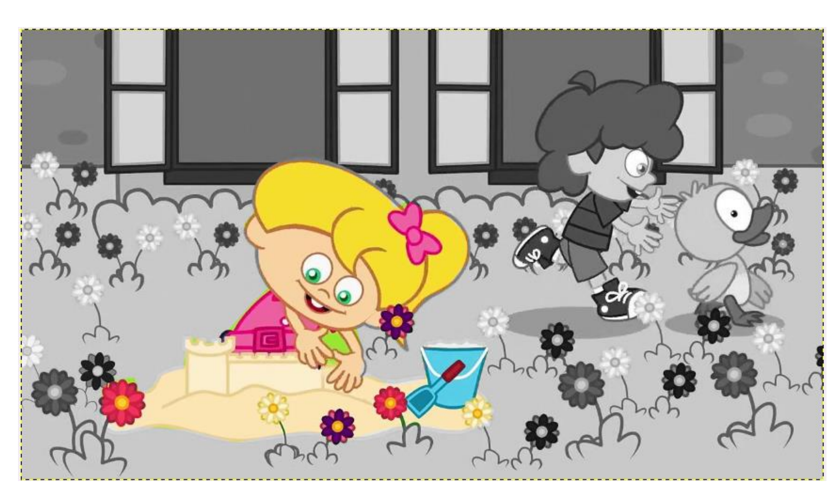


-To delete the part that was selected, click on the Edit menu and choose Cut.

-After deleting the selected part in the upper class, part of the content of the RGB colored bottom layer appears.

-to remove the selection, choose None from the Select menu.





The image after modifications

Export image file

Exporting images file

After completing the work on the image, image saving stage comes.

The Save command is selected from the File *menu* where GIMP program gives extension to the image file .XCF, where all information about the image (its layers, transparency …) is kept. This extension is useful in the case of re-opening the image file and editing it. But it should be noted that this extension is not suitable for reading through a variety of images programs.

Export image file using the Export command from the File menu:

In order for other programs to be able to read the image file, the image must be exported through the Export command from the File menu where the appropriate image file extension such as (JPEG -GIF - PNG ...) is selected.

Remember

Image types:

-Raster Images.

-Vector Images

There are three modes of color of the image; namely:

1. **RGB mode.**
2. **Grayscale mode.**
3. **Indexed mode.**

RGB mode consists of the primary colors (red, green and Blue), and these three colors are mixed and united with different degrees of mitigation, lighting and intensity to give each primary color of these colors 256 color degree.

Grayscale mode

The image can be converted to the color grayscale by using the command Grayscale from Image menu, where Grayscale mode reaches up to 256 degrees of gray ranging from black to white.

-The image can be converted from RGB mode to Grayscale by selecting the Grayscale command from Image menu, But it should be noted that the image will lose its Colorimetric data of the RGB mode so that the RGB mode for the image cannot be restored again.

In order for other programs to be able to read the image file, the image must be exported through the command Export from the File menu where the appropriate image file extension such as (JPEG -GIF - PNG ...) is selected.



Exercises

Tick (√) in front of the right answer and (×) in front of the wrong one:

1. In the Vector Image, the quality and clarity of the picture change when zooming in or out. ( )
2. Copy Raster Image is characterized by a change in image quality and clarity when enlarged or minimized. ( )
3. There is only one color mode of the image ( )
4. RGB mode fits very much in the case of display images and graphics through the computer screen ( )
5. RGB mode consists of the primary colors (red, green and black) ( )
6. You can convert the image to the color grayscale using the Grayscale command.( )
7. You can convert the image from RGB mode to Grayscale mode where the image loses its Colorimetric data ( )
8. In order for other software to read the image file, the image must be exported through the Save command from the File menu ( )
9. The image Can be converted from RGB mode to Grayscale mode ( )
10. The large size storage area is from the Vector Image defects ( )



A warm up Question for the next lesson:

After knowing and using some of the tools and the image creation and processing program, how you can design and create a painting?